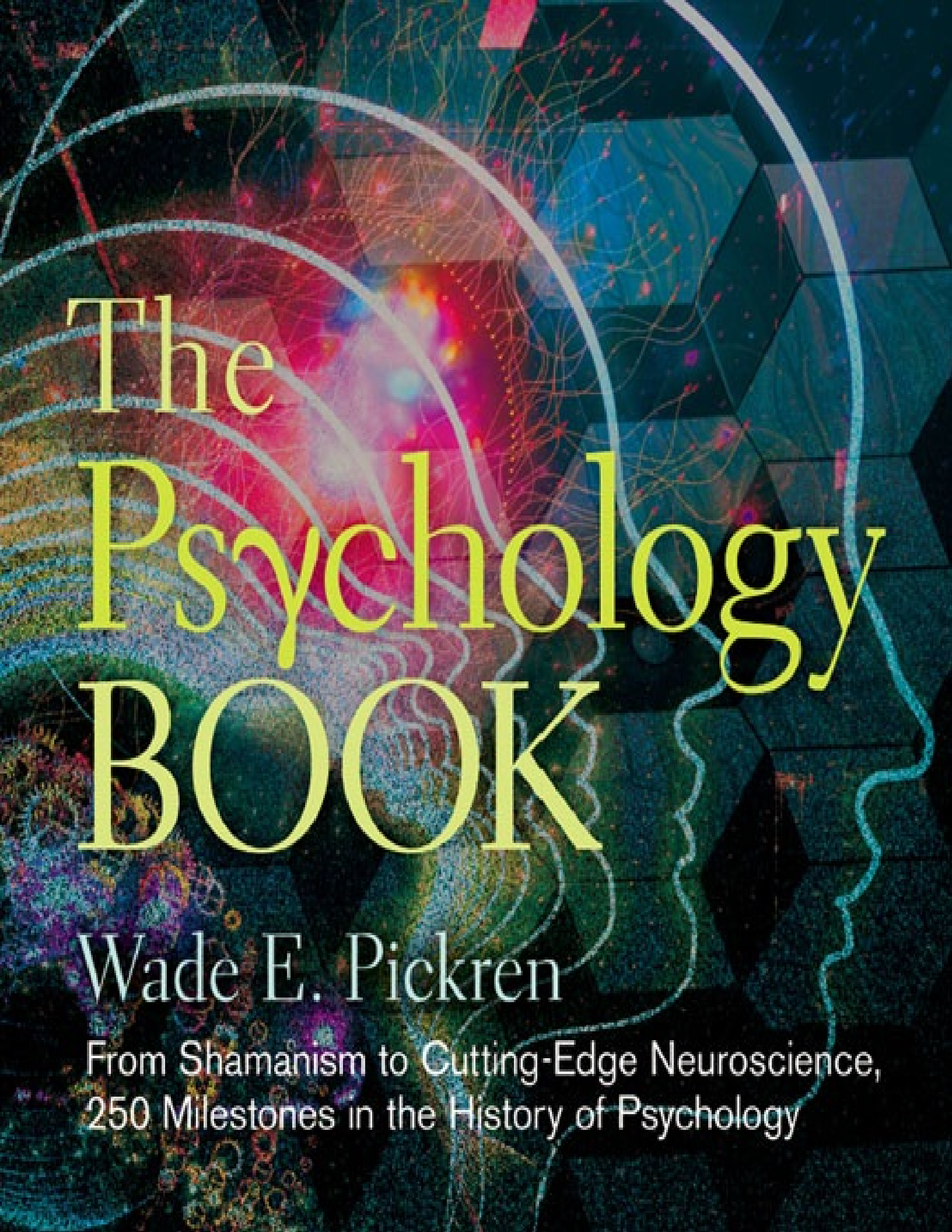

Wade E. Pickren

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250 Milestones in the History of Psychology

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THE PSYCHOLOGY BOOK

FROM SHAMANISM TO CUTTING-EDGE NEUROSCIENCE, 250 MILESTONES IN THE HISTORY OF PSYCHOLOGY

Wade E. Pickren

Foreword by Philip G. Zimbardo, PhD

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“We are such stuff as dreams are made on, and our little life is rounded with a sleep.”

—William Shakespeare, *The Tempest*, c. 1611

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Foreword

> *"The mind is its own place, and in itself can make a heaven of hell, a hell of heaven."*
>
> —John Milton, *Paradise Lost*, 1667

Over forty years ago, I conducted an experiment that haunts me to this day. While exploring the question, "Under what circumstances does evil arise?" I watched college student volunteers readily commit acts of cruelty during a simple role-playing exercise at a mock prison in the basement of Stanford University. In fact, witnessing the dramatic behavioral and psychological transformations in these predominately white, middle-class young men following their random assignment of "prisoner" or "guard," I was forced to terminate the planned two-week long experiment after only six days. That study, along with Stanley Milgram's earlier demonstration of the extent to which the vast majority of ordinary adult citizens could be led to being blindly obedient to unjust authority, illustrated in dramatic fashion the pervasive power of situational forces over individual dispositional propensities.

The abuses committed at Abu Ghraib decades later (in 2004) have given the Stanford prison experience added validity. In my 2007 book *The Lucifer Effect*, I drew comparisons between the two situations, shedding light on the psychological dynamics at when such pronounced power disparities are evoked. These dynamics include deindividuation, obedience to authority, self-justification, rationalization, and dehumanization. The latter, in particular, is central in the transformation of normal individuals into indifferent or even wanton, prejudiced perpetrators of evil. In addition to investigating the forces that generate the evil of action, I have been as interested in understanding the forces within people and situations that lead to the evil of inaction, public apathy, or indifference to the suffering of others, the bystander effect in emergency situations or in bullying settings.

I have spent much of my professional career studying the psychology of evil, and the reason I have done so is also a testament to the power of the broader Situation shaped in part by evil-generating Systemic forces. Growing up in

poverty in the South Bronx ghetto, New York City, during the years of the Great Depression, shaped much of my outlook on life and my priorities. Urban ghetto life is all about surviving by developing useful “street smart” strategies. That meant figuring out who had the power that could be used against you or to help you, whom to avoid or to whom you should ingratiate yourself. It meant deciphering subtle situational cues for when to bet and when to fold, for creating reciprocal obligations. Most importantly for me as a scrawny, sickly kid was figuring out what it took to make the transition from being a passive follower to a dynamic leader by observing both types in various settings. Once I knew those key behavioral and stylistic differences, it was easy for me to always be the leader, the captain, or the chosen and elected president (even of the American Psychological Association).

In those days, ghetto life was about people without possessions. Some of these kids became victims or perpetrators of violence; some kids I thought were good ended up doing some really bad things, in part because they were seduced by older guys whose job it was to get the kids to do bad things in order to get some money, such as selling drugs, stealing for them, or even selling their bodies. It seemed clear to me that the difference between those kids and my other friends who did not cross the line between good and evil was that those who could maintain positive values were more likely to come from intact families where there was a father present at least much of the time.

But even for us mostly good kids, there was a ritual of coming of age on East 151st Street. As part of the gang initiation process we all had to steal from the grocery store, fight against another kid who was the newer recruit, do some daring deeds, and intimidate people. In our minds, none of what we did was evil or even bad; we were merely obeying the group leader and conforming to the norms of the gang. With such rearing, it’s obvious where my curiosity about the corrupting power of authority comes from, as well as my lifelong mission to oppose it openly—including challenging the political powers that have forced our nation into unnecessary immoral wars in Vietnam and Iraq.

My former colleague at the American Psychological Association, historian Wade Pickren, has put together an amazing collection of historical milestones in the study of mind and behavior that gives readers a broader, more meaningful context to the events that unfolded in that basement at Stanford University more than forty years ago. Of course, this unique reader does much more than that—it offers us a vibrant historical context for appreciating much that makes up the Human Condition. From prehistoric times, we humans have sought to better

understand each other and ourselves. Concerning a person's propensity for cruelty, explanations have ranged from possession by evil spirits, to an imbalance of humors, to antisocial personality disorder. In the twentieth century, aggressive impulses were traced to psychosexual complexes or excess neuronal activity in the brain's amygdala. Certainly, violence results from a complex interplay of biological, psychological, and environmental factors, but an extensive body of research has shown that immediate "situational" forces are more powerful than we acknowledge in shaping our behavior in many contexts.

One of the dominant conclusions of the Stanford Prison Experiment is that the pervasive yet subtle power of a host of situational variables can dominate the individual's will to resist. Then there's the System—the complex of powerful forces that create Situations. However, most psychologists have been insensitive to the deeper sources of systemic power that inhere in the political, economic, religious, historical, and cultural matrix that define situations and gives them legitimate or illegitimate existence. Instead of focusing only on "bad apples" we must realize that a full understanding of evil demands uncovering the nature of the "bad barrels" in which "good apples" are sometimes placed, as well as to determine who are the "bad barrel makers." Thus, I argue that a full appreciation of the dynamics of human behavior requires that we recognize the extent and limits of person power, of situational power, and of systemic power.

One of the great things about the field of psychology is that, at the end of all this inquiry into the human mind, the ultimate goal is to improve quality of life on an individual and societal basis. No doubt, understanding the biological mechanisms underlying various mental disorders and abnormalities is critical to this. Our knowledge of the brain has grown significantly over the last hundred-odd years, but with recent estimates of as many as 100 billion individual neurons residing in the cortex and cerebellum, the brain is proving to be far more complex and difficult to understand than anything else in the universe. President Obama's recent establishment of the BRAIN Initiative will certainly shed light on the most vital connections between various types of brain neuronal activity and psychological states and behavior they create, but our knowledge of this fascinating organ will probably never be complete.

Indeed, neuroscience has provided us with significant, detailed information about how the brain works, but as a myopic scholar might mistake the forest for the trees, there are limitations to what brain science can teach us about human life and the experience of being Human. Social psychology, by contrast, takes a much wider view, stepping back to observe the interaction of individuals within

cultural frameworks. Changing or preventing undesirable behavior of individuals or groups requires an understanding of what strengths, virtues, and vulnerabilities they bring into a given situation. Then we need to recognize more fully the complex of situational forces that are operative in given behavioral settings. Some of those forces are cultural imperatives that may not be apparent to outsiders. Modifying them, or learning to avoid them, can have a greater impact on reducing undesirable individual reactions than remedial actions directed only at changing the people in the situation.

Most of our remedial programs to deal with social problems focus only on changing the Person—through education, propaganda, therapy, punishment, torture, imprisonment, and exile. They rarely have the desired effect if the culprit is the situation or the system or individuals with different response styles, such as being present-oriented rather than future-oriented. Instead, I believe that means adopting a public health approach to promote prevention in the general public in place of the standard medical model approach to curing existing individual ills and wrongs. However, unless we become sensitive to the real power of the System, which is invariably hidden behind a veil of secrecy, and fully understand its own set of rules and regulations, behavioral change will be transient and situational change, illusory.

Finally, for me what is so wonderful about modern, current psychology is its new breadth now married to a broader depth—in which some of my colleagues are developing new methods and procedures to unlock the secrets of mind and brain and behavior of individuals, groups, and societies across cultures and over generations.

Philip G. Zimbardo, PhD
Professor Emeritus of Psychology,
Stanford University

Introduction

The great memory scientist Hermann Ebbinghaus (1850–1909) is often quoted as saying that psychology has a long past but a short history. Humans have indeed thought about many of the ideas and practices that we now call psychology for a very long time. For about the last 150 years, there has been an effort to develop the scientific study of those ideas. In addition to science, modern psychology is also a profession, with many practices designed to help people live better lives and cope with the demands of contemporary society. This duality of psychology makes it a rich and rewarding subject that reaches into every aspect of our lives today.

The Scope of Psychology

Psychologists study topics that are of great interest and usefulness in everyday life, such as children's development, decision making, work, sleep, aging, health, and many other topics. Psychologists have also developed a variety of theories about the functioning of the mind, from Sigmund Freud's energy model to the computer model of Nobel Prize winner Herbert Simon. Therapies designed to help people cope with psychological problems have become an important part of psychologists' work as well.

Modern psychological science and practices developed most rapidly in Europe and North America, but the roots of both science and practice can be found throughout recorded history. As will become apparent in this book, thoughtful people from a variety of times and places have contributed to our understanding of ourselves. For thousands of years, psychological principles were closely linked to religion, philosophy, medicine, and other systems of thought, including astrology and astronomy. In every civilization there have been people who wrote about the human spirit, about mind and behavior, and tried to understand disorders of the mind. People who were not educated or even literate popularized systems of thought linked to the body, such as palmistry, physiognomy, and phrenology, as a way to understand themselves and others.

The Psychology Book is about psychological ideas over the centuries and the people behind those ideas. Both human and animal psychology have fascinated some of the world's great thinkers, and we will explore what they have said and written about them. For example, the American philosopher and psychologist William James once wrote to a friend that "psychology is a damnable subject, and all that one may wish to know lies entirely outside it." James wrote this out of exasperation after spending twelve years writing *The Principles of Psychology* (1890), which is considered one of the greatest books in the field. Clearly, James did not reject psychology; in fact, he continued to make significant contributions until his death in 1910. His comment may best be understood as reflecting the complexity of psychology. How can we ever understand something as varied as human thought and behavior?

Indeed, psychology is one of the most complex of all scientific and professional fields. It often appears at first glance to be just a matter of common sense, its truths intuitively accessible, or a matter of common folk knowledge. Yet as we look closer, we see that what appeared on the surface to be common sense is actually a science, rich in knowledge, nuance, and subtlety. An example from cognitive psychology may serve as an illustration. In the 1970s, Israeli psychologists Daniel Kahneman and Amos Tversky wondered what might lead people to make decisions that were not rational or in their best interest. They found that when a person has to make a decision in a condition of uncertainty—for example, when asked whether more people die in plane crashes or automobile accidents—he or she may rely on a mental shortcut, or heuristic, to aid in making the decision. These shortcuts may be based on the ease with which an example comes to mind—the availability heuristic—or on the assumption of similarity where none exists, commonly called the representativeness heuristic. Kahneman and Tversky showed that human beings are not always rational—and perhaps not even primarily so—in making decisions. Of course, Sigmund Freud had argued that humans are not creatures of reason almost a century before Kahneman and Tversky, although he based his arguments on very different evidence. In *The Psychology Book*, we will encounter many questions about rationality, emotionality, and their important consequences.

What about the multitude of human behaviors that are important not only for our personal survival but also for the survival of our species? Freud, as you may know, wrote extensively about human sexuality. He claimed that the most basic motivation in life is sex, and that our personalities are shaped very early in life by how we resolve the tensions between pleasure and the dictates of society.

Before and after Freud, people have theorized about the place of sex in human life and how to understand the powerful sexual urges that most humans feel. In some societies, sexuality is celebrated and open, while in others it is a taboo topic. Recently, evolutionary psychologists have theorized that the template for male-female sexual attraction is based in our ancient evolutionary past. Other psychologists argue that sexual attraction is socially constructed and that what we see as desirable is shaped by the environment in which we live.

In today's world, one of the most frequently asked questions concerns our personalities. What kind of person am I? How can I understand myself better so that I can be more successful in relationships, work, and other domains of life? Human beings have sought answers to these and other questions for millennia. In ancient Mesopotamia, Egypt, and medieval Islamic countries, people created the signs of the zodiac in an attempt to understand themselves and others. Palmistry and numerology are also ancient strategies for understanding, predicting, and controlling human behavior. In fact, the human body has often been used as a way for people to understand themselves. Physiognomy sought to understand human character by the shape of one's face, and phrenology offered explanations of character and abilities based on the shape and protrusions of the human skull. Similar body-based theories have continued to our own day, with such well-respected developmental psychologists as Jerome Kagan and Nathan Fox claiming that there are typical body differences between shy and non-shy children. In the twentieth century, psychologists developed other approaches that were based on responses to surveys and questionnaires. This allowed for statistical manipulation of the respondents' data and resulted in an apparently more scientific approach to personality theory. Older theories, such as those of Sigmund Freud and Carl Jung, however, have retained great appeal for millions of people around the world. We will explore several landmark theories of human personality in *The Psychology Book.*

The rich variety of human experience described in the following pages is intellectually exciting and stimulating. We will note the important discoveries and theories in many areas of psychology. Since the science of psychology connects with almost every other domain of life on this planet, it will be difficult to touch on all of those connections, but you will find interesting, important, and sometimes humorous milestones here. People's thoughts about human relationships, from love to sex to friendship to hate, are all represented in the book. So, too, are important contributions to understanding human development from the womb to the tomb. Work life is an important domain for each of us, and

psychologists have made many important contributions to its understanding. Personality and mental health and illness are often linked, and we will see what key contributions have been made in these related areas. In the last two decades, happiness has become an object of research, especially within the Positive Psychology movement, and we will see how this current topic is linked to past ideas. Psychology also encompasses brain science. Since the mid-nineteenth century, scientists have made tremendous advances in understanding how the brain shapes behavior and, conversely, how the brain is changed by our experience. Inventions and technology have been used by neuroscientists to explain basic psychological processes such as memory formation and to explain how psychotropic medications act to relieve depression and anxiety. In other words, our topic is large, with many facets and important milestones.

Chronology

The Psychology Book is organized according to the year associated with an entry. For very early contributions, the date may not be absolutely certain. In most cases, however, we can point to a particular date when a theory was proposed, a book was published, or an event occurred. When there is a matter of debate, the date or period most commonly agreed on will be used.

Acknowledgments

I would like to thank the many scholars whose insightful work informed me as I wrote *The Psychology Book.* Numerous historians of science, medicine, professional practice, and technology have shaped my thinking about the history of psychology. Members of Cheiron: The International Society for the History of Behavioral and Social Sciences as well as the Forum for History of Human Science and the Society for the History of Psychology all shed much-needed light on the many tributaries of thought and practice that have flowed together to create contemporary psychology. A very special thanks to Alexandra Rutherford, whose support and insight helped make it possible for me to complete this book.

Shamanism

c. 10,000 BCE

Henri Ellenberger (1905–1993), **Sudhir Kakar** (b. 1938)

The discovery in Israel of the 12,000-year-old remains of a prominent female, along with more than seventy tortoise shells, in a burial pit within a cave dates the practice of shamanism to at least 10,000 BCE. It is common in modern histories to discount the "medicine" practiced in preliterate or undeveloped societies. Historian of psychodynamic practice Henri Ellenberger and Indian psychoanalyst and historian Sudhir Kakar, however, have shown how those practices brought healing and relief, both psychological and physical, to the people in their communities.

Shamanic practices were the first psychotherapies, and they were successful because they were rooted in the worldview of their communities. Two examples will help us understand. Many preliterate societies thought that a person becomes ill when the soul leaves the body, perhaps because it was stolen. The work of the shaman is to find the soul and restore it to the body. In Siberia, the shaman may have to travel to the land of the spirits to find the soul. While there, the shaman may bargain with the spirits, offer gifts, or even fight with them for the soul, which he then restores to the body. In Latin America, a person who suffers from *susto* (Spanish for "fright") has lost his or her soul as a result of being frightened or under the spell of evil influences. The *curandero* may perform a public healing ceremony that involves the preparation of a special mixture of flowers or grain that is left in the patient's clothing at night. The *curandero* then marks a trail with the same mixture so that the spirit can find its way back to the person's body.

The connection between these shamanic practices and modern psychotherapy is in the restoration of what was lost to the patient. In our time, a person is said to be alienated or to have lost his mind; the work of the healer is to find ways to restore that which has been lost.

SEE ALSO Jungian Psychology (1913), Psychoanalysis (1899), Culture-Bound Syndromes (1904),

Discovery of the Unconscious (1970)

Shaman during healing ceremony, Australia, 2012.

Trephination

c. 6500 BCE

There is evidence that humans have been trephining, or cutting holes in human skulls, since at least Neolithic times. The first evidence that the practice was ancient came from a skull excavated in Peru in the 1860s, but Europeans at the time were skeptical that the indigenous people could have performed such a procedure. Over the next twenty years, more evidence accumulated that the practice had been widespread in the ancient world. In fact, out of 120 prehistoric skulls found at one burial site in northeastern France dated to 6500 BCE, 40 had trephination holes. What was not clear was why trephining was performed.

Medical texts from ancient Greece included reports of using trephination to treat head wounds, and by time of the Roman Empire, the second-century Roman physician, surgeon, and philosopher Galen reported that trephining had become the standard treatment for relieving pressure on the brain or removing fragments from an injury. Since the discovery of the trephined skull in Peru, more such skulls have been found at sites throughout Central and South America.

In early modern Europe, there is abundant evidence that trephination was a common surgical practice to treat head wounds. The practice persisted, with more refined tools, into the nineteenth century. At that time, it was still common to perform trephinations in the home. It is currently used—though not under the label of trephination—to treat hemorrhaging under the skull.

It cannot be known for certain why trephination was performed in prehistoric times. If we examine the available evidence from the earliest reports, it is possible that trephining was used to treat some forms of mental illness. There are reports dating from the twelfth century in which the practice was recommended for the treatment of depression and manic episodes.

The possible use of a physical intervention to treat mental illness foreshadowed the treatments of bleeding and purging that were common for madness in the early modern period. It also foreshadows the twentieth-century use of lobotomies to treat serious mental illness.

SEE ALSO Psychosurgery (1935)

Skull of a girl who survived trephining, c. 3500 BCE.

The practice of trephination was well known in 1494, when Dutch painter Hieronymus Bosch painted Cutting the Stone, *also known as*

The Extraction of the Stone of Madness.

Palmistry

c. 5000 BCE

Although no one knows its exact beginnings, palmistry, or chiromancy, is perhaps the most ancient example of humans' long history of "reading" the physical body as a way to understand the self and others. The belief in chiromancy arose at a time when there was a more holistic view of life; that is, it was assumed that each person was part of the circle of life, which included the spiritual world, the physical cosmos, and the community of which he or she was a member. Given this worldview, then, it made sense that each person's body would contain signs of these connections. It is not known when palmistry emerged, although speculative histories place its origins in India or China, but there is historical evidence of its practice in ancient Greece and India. Palmistry almost certainly predates recorded history. On one level, palmistry assumes that the hand is a metaphor for the whole person, and its characteristics reflect the individual's spiritual, mental, and physical state. Reading the palm on this level makes it possible to know the person's character and even divine his or her fate. On a higher level, the hand is the universe in a microcosm; the hand thus links the spiritual and physical aspects of the universe and humanity's role and place within it. The physical character of the hand—spots, lines, creases, colors, and so on—is connected to the planets, the stars, and numbers. Each characteristic has meaning, with different interpretations or readings for right and left hands.

Beyond their significance in chiromancy, the hands became an important psychological tool for memory. Each part of the hand had a distinct mnemonic function, stimulating specific types of memories. Typically, there was an order to the sites so that associations could be formed between the location and the desired memory.

What is historically important about palmistry is that it gave people an opportunity to understand the world and their place in it. The hand and its interpretation served as a gateway to the spiritual world while also indicating the inner character of the person. Although it is not psychological in the strictest sense, it does serve as a forerunner to a psychology of individual differences.

SEE ALSO Physiognomy (1775), Phrenology Comes to America (1832), Somatotypes (1925)

Fortune-Teller *by the French painter Charles-André van Loo, eighteenth century.*

Astropsychology

c. 700 BCE

Claudius Ptolemy (c. 90–c. 168 CE), **Carl Gustav Jung** (1875–1961)

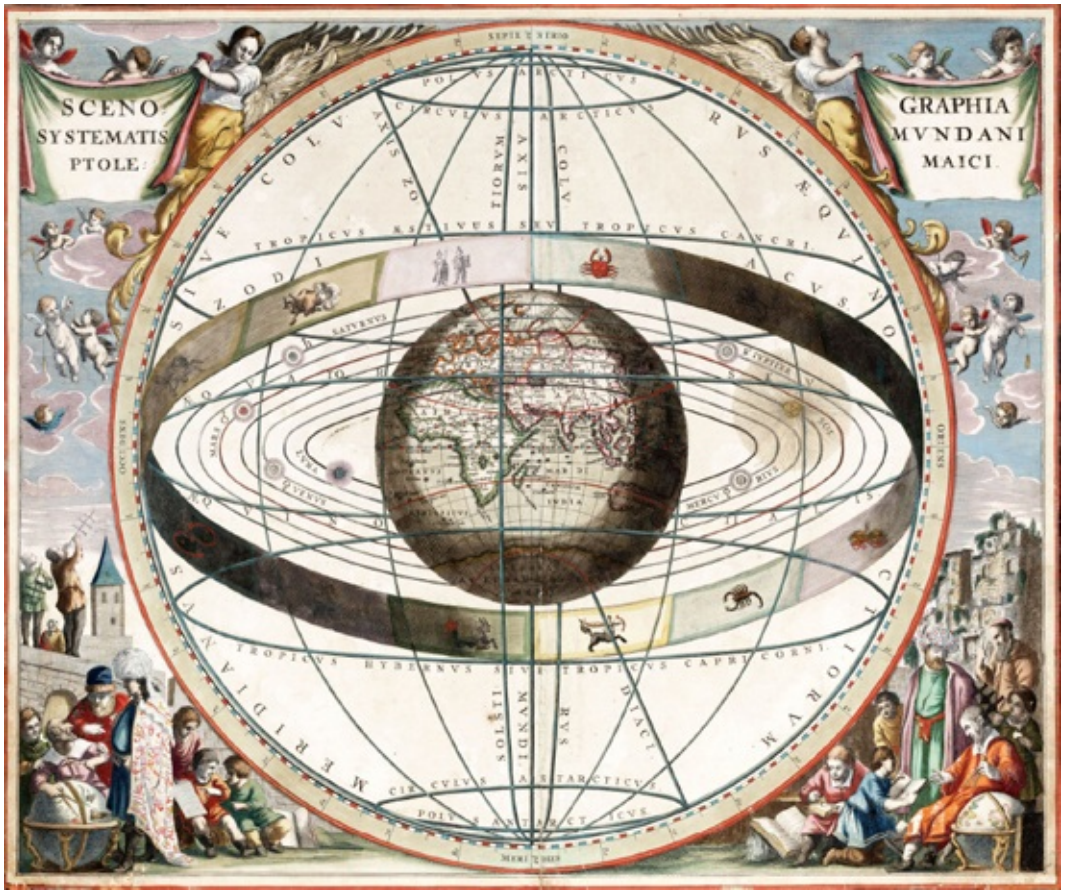
The idea that human behavior is influenced by the cosmos is an ancient one, dating at least to the third millennium BCE. Pictographs on stone cylinders from this time appear to indicate the activity of the gods through the constellations. Over the centuries theories of cosmic influence proliferated, often tied to specific metaphysical, religious, and philosophical systems. These various classifications sought to describe, explain, and even predict the course of human affairs; by medieval times they were oriented to the individual.

As early as the seventh century BCE in Babylonia, a system evolved that represented the movement of the sun among the twelve constellations that comprise the zodiac throughout the course of a year; the Dendera zodiac found in Ptolemaic Egypt's Hathor temple, thought to date from the first century BCE, is one example. Babylonian astrology was adapted and modified by the Egyptians, Greeks, Romans, and Indians, among others. Each sign of the zodiac was represented by an animal, standing in for a constellation of stars and planets that were thought to influence the events and fortunes pertaining to the time when that sign was ascendant. Astrology was considered a technical science relevant to weather, politics, alchemy, and medicine for millennia. The macroscale of the heavens was linked to the microscale of the individual person. A popular saying—"As above, so below"—arose from these beliefs. In medicine, this view meant that just as the earth was governed by the heavens, so human health was governed by the influence of particular aspects of the zodiac on specific regions of the body.

Over time, astrology came to be viewed as a way not only to understand health and human destiny but also to describe individual human personalities. A defining publication in this emerging field of "astropsychology" was *Tetrabiblos (Four Books)* by the influential Alexandrian scholar Claudius Ptolemy. Written

in the second century CE, it linked the positions and movement of the Sun, Moon, and planets to psychological motives. The sign that was ascendant at the time of birth was thought to influence a person's characteristics. Thus, for example, one born when Sagittarius was ascendant may well be philosophical, a lover of knowledge, and likely to travel. In the twentieth century, Swiss psychologist Carl Jung incorporated astropsychology into his theory of **Archetypes**, explaining the zodiac as a reflection of our collective unconscious.

SEE ALSO Projective Tests (1921), Archetypes (1934), Thematic Apperception Test (1935), Minnesota Multiphasic Personality Inventory (1940)



Map of the Ptolemaic cosmography, including signs of the zodiac, from Andreas Cellarius's Harmonia Macrocosmica, 1660.

Buddha’s Four Noble Truths

528 BCE

Siddhārtha Gautama (c. 563–c. 483 BCE)

Extant accounts of the Buddha’s life indicate that he grew up amid wealth and had a privileged existence. While still a young man, Siddhārtha Gautama was confronted with suffering in the world on three important occasions. First he went to a nearby town and came upon a sick man. On his second trip to the town he came upon an old man, and on his third trip he came upon people carrying a corpse to its resting place. These encounters affected him deeply and led to the realization that wealth and privilege offered little protection from suffering. At around the age of twenty-nine, Guatama left home and began the life of a religious wanderer. For six years he studied with spiritual teachers but found the rigors of asceticism and self-mortification to be ineffective in dealing with suffering; he realized that such practices could not lead to enlightenment. Then, when he was about thirty-five, he decided to sit quietly and reflect on the human condition. Legend has it that while sitting thus under a fig tree, or Bodhi tree, he was enlightened and became the Buddha, seeing that what was required was the Middle Way—a life of discipline without the extremes of self-indulgence or self-mortification.

As the Buddha, he taught that there are three basic characteristics of existence: (1) everything is impermanent, and thus change is constant; (2) there is no self or immortal soul; and (3) suffering, or dissatisfaction, is at the core of existence. Buddha taught that we must embrace the Four Noble Truths if we are to overcome suffering. The first truth is that suffering exists, the second is that desire is the root of suffering, the third is that if we eliminate desire we can end suffering, and the fourth truth is that there is an Eightfold Path, or Middle Way, that will lead to enlightenment.

Buddha and his followers’ teachings over the centuries are an elaboration of how to follow the Middle Way. In contemporary life, Buddhist psychology has introduced meditation and mindfulness into everyday life and into psychotherapy. Buddhist psychology deals with insight, personal transformation,

and deeper awareness of reality and holds great appeal for personal and social liberation.

SEE ALSO Biopsychosocial Model of Health (1977)

Buddhas, Sri Lanka.

Confucian Psychology

c. 500 BCE

Confucius (551–479 BCE)

Kong Fuzi (“Master Kong”), known in English as Confucius, played many roles in his life: diplomat, teacher, and philosopher. Around 500 BCE, he also became an important political adviser. His teaching on the Way of Humanity provided a model for how to live, how to understand one’s obligations, and how to treat others.

The five interrelated aspects of Confucianism are destiny, mind, ethics for ordinary people, self-cultivation, and ethics for scholars. Confucius stated simply that we all share the destiny of birth, aging, disease, and death, but we nevertheless have a responsibility to act morally in relation to our fellow humans. The Confucian model of mind has two aspects: a mind of discernment, which includes our cognitive abilities, and a mind of benevolence, which is our ethical mind or conscience.

Ethics for ordinary people asks each person to show benevolence or affection toward those who are close, and to act righteously, showing respect for each person, especially to those who have superior social rank; in doing so, the person will observe propriety and contribute to smooth social functioning. Benevolence, righteousness, and propriety make up the Way of Humanity, which is intended to reflect the Way of the Heavens. Through self-cultivation in the Way of Humanity, we develop into people of deep moral character and move toward attaining the three virtues of wisdom, benevolence, and courage.

Since the end of the Cultural Revolution in China in the mid-1970s, the discipline of psychology has grown rapidly, as indicated by its esteemed place in the Chinese Academy of Sciences. Chinese psychologists have built on the Confucian tradition to empirically demonstrate that the traits of interpersonal relatedness, holism, dialectical self, relationship harmony, and concern with face are unique expressions of the Chinese personality.

SEE ALSO Big Five Personality Factors (1949), Moral Development (1958)

Statue of Confucius outside Confucius Temple in Shanghai, China.

Aristotle's *De anima*

c. 350 BCE

Aristotle (384–322 BCE)

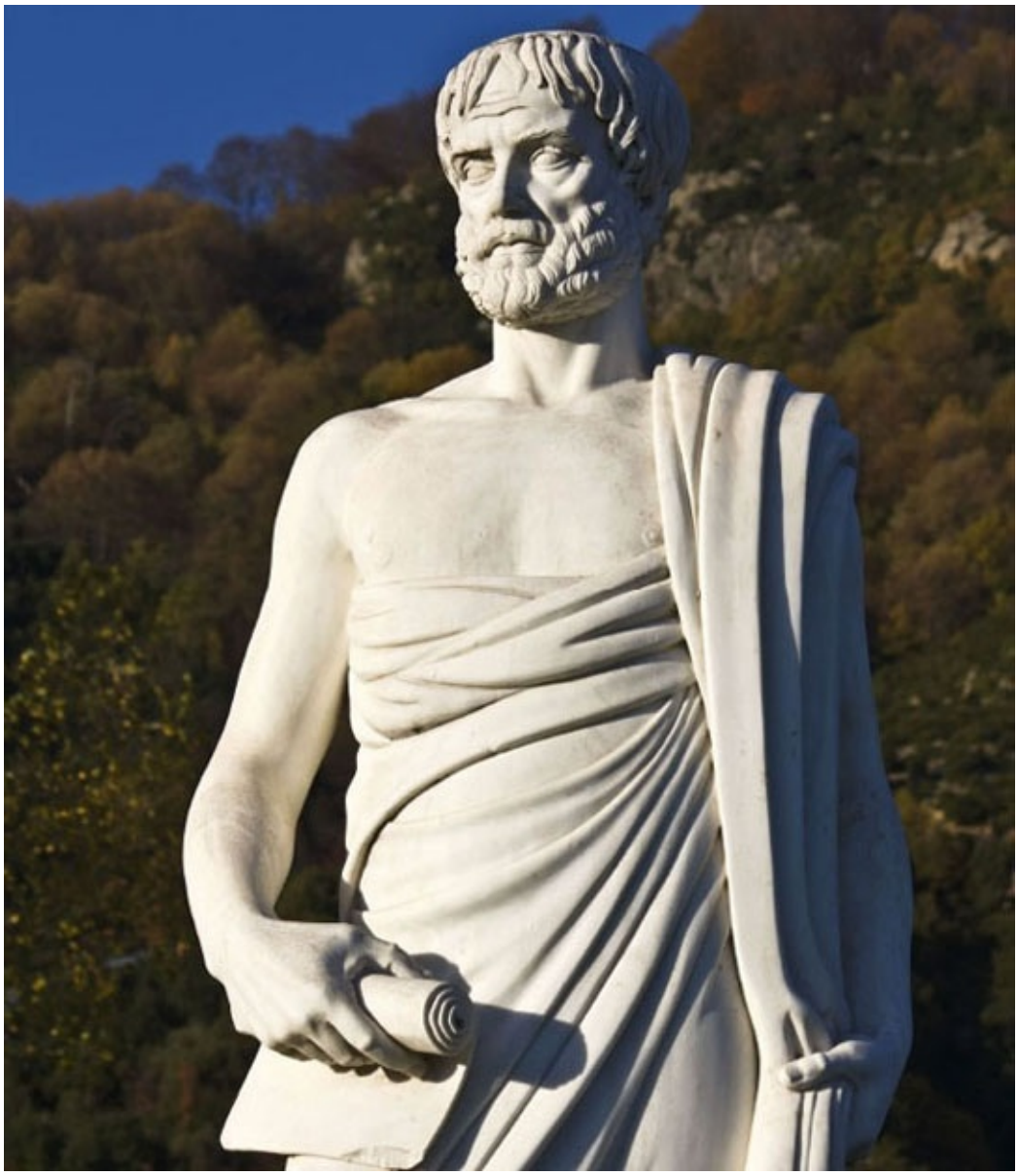
Aristotle's great work of psychology, *De anima*, written around 300 BCE, roughly translates as "on the soul." In it, Aristotle contends that he will present information that has its basis in experience rather than mere dialogue and speculation. Early in his argument, he takes the stance that our understanding of human psychology (emotions and sensations are specifically mentioned) depends on our knowledge of the body and its physiology. One might say, therefore, that Aristotle proposed the possibility of a physiological psychology.

Soul, or psyche, is the vital principle that differentiates the animate from the inanimate world, according to Aristotle. All living things have soul, but there are different forms of soul. At the lowest level, plants have nutritive soul. Animals have sensitive soul, which gives them awareness of their surroundings and means they seek to avoid pain and pursue pleasure. At the highest level, humans have rational soul, which includes nutritive and sensitive soul but adds the additional component of the mind, or the power to think and reason.

For Aristotle, knowledge begins with perception and is built on the input from our senses. When these observations persist, we have memory. This happens in the passive mind, which stores our general knowledge. The passive mind may be thought of as holding potential wisdom, which must be acted on by the active mind through mental operations or reason so that it becomes actualized knowledge—specifically, an understanding of the universals. The active mind is pure thought and is the same in all people.

As an example of the operation of the active mind, recall of past experiences or information is governed by the principles of similarity, contrast, and contiguity. When we recall an event or object, it may elicit memories of other objects or events like it, opposite to it, or occurring near to it in time. These principles of associative memory have continued into our own day.

SEE ALSO Short-Term Memory (1956), Levels-of-Processing Model of Memory (1972)



Statue of Aristotle at his birthplace in Stageira, Greece.

Asclepius and the Art of Healing

c. 350 BCE

Asclepius was an important figure in Greek mythology who became the god of healing and medicine. In some stories, he is a man, in others a god. His father was Apollo, also associated with healing, and his mother was the mortal Coronis; she died either in childbirth or by the devices of Apollo. Asclepius was raised and tutored by the centaur Cheiron, wise and skilled in the arts of medicine, who passed on this knowledge to Asclepius.

Asclepius became knowledgeable in surgery and the uses of various drugs, potions, and healing incantations. He received from the goddess Athena a powerful potion made from the blood of the snake-haired Gorgons, whose appearance turned people to stone; the mixture had the power to heal or even bring the dead back to life, but it also could be a deadly poison.

With his great knowledge and skill, Asclepius became widely known and revered for his treatments. He took as his symbol the staff with an entwined serpent, which represents the duality of the physician's work—life and death, sickness and health. Around 350 BCE, his followers initiated the cult of Asclepius and established centers for treatment, called *asclepeia*.

Those who sought treatment in *asclepeia* underwent a period of purification, drank the waters of a sacred fountain, and then spent one or more nights sleeping in special clothing in an underground chamber. There, Asclepius would reveal the cure of the illness, provide an oracular dream, or sometimes the dream itself would bring healing.

The cult of Asclepius indicates the historic connection between spirituality, religion, and medicine. The art of healing was considered sacred, and the practices were secret, passed from father to son. Asclepian medicine, with its dream therapy, also represents an early form of psychological treatment and thus is an important precursor to modern psychological medicine.

SEE ALSO Jungian Psychology (1913), Mind-Body Medicine (1993)

Temple of Asclepius in Villa Borghese, Rome, 2009.

Bhagavad Gita

c. 200 BCE

Hinduism is the name given by the British to a set of diverse but related religious beliefs and practices on the subcontinent of India. Thus Hindu psychology is not a discipline in the Western sense but rather a mixture of psychological principles and practices grounded in the traditions known as Hinduism.

There are several ancient texts that form the foundation of Hinduism: the Vedas, the Upanishads, and the Purãnas. More "recent" texts include the Mahabbarata, from about the second century BCE. One of the principal epics, or stories, within the Mahabbarata is the Bhagavad Gita. For sake of simplicity, a few principles from these texts are mentioned here, but they by no means incorporate the richness of Hindu thinking about mind, self, and relationships.

Three gunas, or principles, work together to create all that occurs in the universe. The gunas are *tamas* (inertia), *rajas* (activity), and *sattva* (clarity, or light). All three are necessary, but *sattva* is considered the spiritual element, and it is desirable to cultivate this *guna* while maintaining an equilibrium, allowing all three to work together. The intent through practice of these principles—Yoga—is to calm the mind so that self-realization or awareness can occur. When we learn self-control, right action, and practice Yoga, we can change our consciousness so that unhelpful thoughts and habits are transformed into positive and constructive thoughts and actions. There are multiple Yogas, each with a particular emphasis, such as action, sacred chanting, devotion, or knowledge.

In Western terms, these practices are meant to lead to psychological growth, which, according to Hinduism, occurs throughout four life stages: student, householder, forest dweller, and renunciant. Each stage has its own lessons that a person must learn on the way to self-realization. It is common for a person to seek out a guru for guidance, instruction, and especially self-development.

SEE ALSO Transpersonal Psychology (1968)

Wooden carving of Ganesha, god of intellect and wisdom, Panipat, India, 2007.

Humoral Theory

c. 160 CE

Hippocrates (c. 460–370 BCE), **Galen** (131–c. 200 CE)

Humoral theory is a theory of balance and imbalance in relation to health and personality. It shares much with other balance theories, such as traditional Chinese medicine, Ayurvedic medicine, and Unani. Humoral theory was first articulated around the fourth century BCE by the Greek physician Hippocrates, who proposed that a balance of four basic fluids (blood, phlegm, yellow bile, and black bile) was vital for healthy bodies. The Roman physician, surgeon, and philosopher Galen incorporated and extended Hippocratic theory to describe human personality in his dissertation *De Temperamentis* (c. 160 CE). A *sanguine* (confident, cheerful) personality is one in which blood is the dominant humor, while the *phlegmatic* personality is calm and unemotional. The *choleric* personality is angry, reflecting the hot and dry characteristics of yellow bile. Finally, the *melancholic* personality is a result of the dominance of black bile and is characterized as sad and gloomy. The ideal personality resulted from a balanced mix of these humors.

For Hippocrates, Galen, and those who followed, humoral and other balance theories assumed physical health and individual personality were connected as part of the greater circle of life that also incorporated the stars and planets, the political sphere, community life, diet, and climate. All these facets had important implications for any individual's health and fortune. Since physical and mental disease were thought to be a result of humoral imbalance, a physician was expected to know the patient intimately enough to provide individualized treatment, taking into account the astrological, climatological, social, and temperamental factors that might upset the natural humoral balance of the patient.

Humoral theory has persisted into our own time, although the term *temperament* is preferred. Theories of personality developed by Carl Jung owed a great deal to the humoral tradition, especially in the **Myers-Briggs Type Indicator**, the widely used test based on Jung's work. The advent of modern

biomedicine discounted the humoral approach, but by the late twentieth century, the need to recognize psychological factors was once again thought vital to appropriate health care.

SEE ALSO Bedlam (1357), Jungian Psychology (1913), Myers-Briggs Type Indicator (1943)

Anatomical Man *by the Limbourg brothers, early fifteenth century. Four Latin inscriptions describe the properties of each sign according to the four complexions (hot, cold, wet, dry), the four temperaments (choleric, melancholic, sanguine, phlegmatic), and the four cardinal points: "Aries, Leo, and Sagittarius are warm and dry, choleric, masculine, Eastern" in the upper left; "Taurus, Virgo, and Capricorn are cold and dry, melancholy, female, Western" in the upper right; "Gemini, Aquarius, and Libra are hot and humid, sanguine, masculine, Southern" in the lower left; "Cancer, Scorpio, and Pisces are cold and wet, phlegmatic, feminine, Northern" in*

the lower right.

Sustenance for Body and Soul

c. 900 CE

Abu Zayd Ahmad ibn Sahl al-Balkhi (c.850–934 CE)

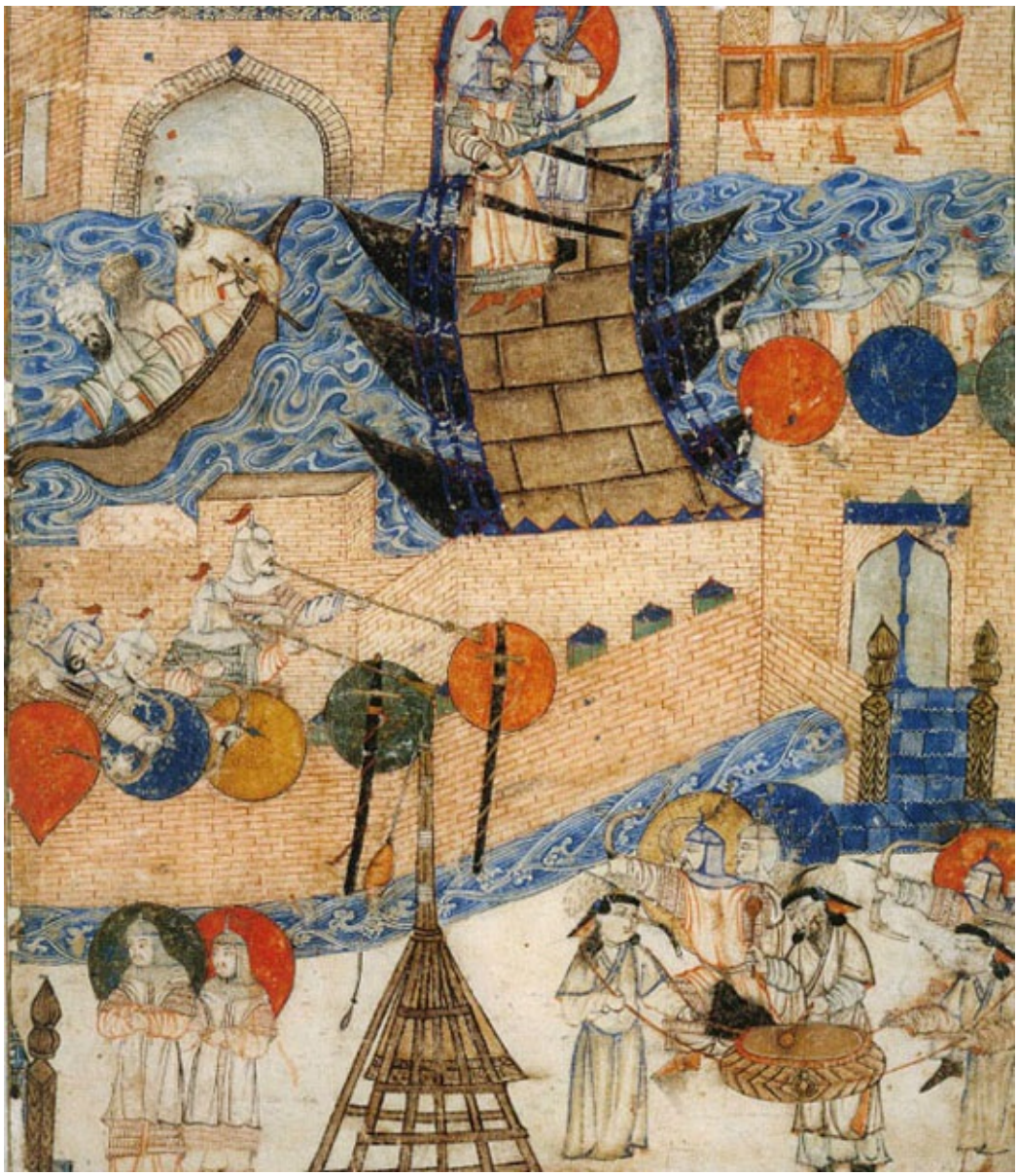
In the golden era of Islamic philosophy and science, which extended from the mid-eighth century to the conquest of Bagdad in 1258 by the Mongols, the scholar Abu Zayd al-Balkhi authored a treatise on how to understand and treat problems of mental illness, especially depression. Outlining a rational therapeutic approach to treating neuroses that foreshadowed some aspects of modern cognitive therapies, al-Balkhi incorporated the three components of mental health addressed in the Qur'an—*nafs* (psyche), *qalb* (heart), *and 'aql* (mind)—to formulate an approach to mental soundness. In order to be mentally healthy, it is necessary to maintain a balance among these elements.

Al-Balkhi's *Sustenance for Body and Soul* (*Masalih al-abdan wa al-anfus*) addresses the following topics: the importance of sustaining the health of the *nafs;* preventing mental illness by cultivating positive mental hygiene; how to regain mental health once mental problems arise; psychological symptoms and their classification; anger management; managing fear and panic; treatment of sadness and major depression; dealing with obsessive thoughts and negative inner speech. In his book, al-Balkhi classifies neuroses into four categories: fear and anxiety, anger and aggression, sadness and depression, and obsessions. Of these four, he wrote in greatest detail about depression (*al-huzn*). Al-Balkhi pointed out that depression can result from the loss of loved ones, loss of personal belongings, and failure to reach goals or achieve success. Therapy for *al-huzn* is based on the cultivation of cognitions to counter the depressive thoughts. Because this treatment is within a religious tradition, al-Balkhi also recommended the recitation of the Qur'an as a necessary part of recovery.

Al-Balkhi also wrote about the relation of physical health to psychological states. He described how the physical and the mental interact to cause psychosomatic disorders, which can be prevented by maintaining a balance between mind and body and using positive thoughts or memories to counter negative emotions.

Cognitive therapies and the understanding of psychosomatic disorders in the Western medical-psychological tradition were twentieth-century developments. It is remarkable that al-Balkhi offered similar approaches more than one thousand years earlier.

SEE ALSO Canon of Medicine (1025), Psychosomatic Medicine (1939), Cognitive Therapy (1955)



Right side of a fourteenth-century double-page illustration depicting the fall of Baghdad in 1258, from Rashid-al-Din Hamadani's Compendium of Chronicles *on Islamic history.*

Canon of Medicine

1025

Avicenna (980–1037)

Abū ‘Ali al-Husayn ibn ‘Abd Allāh ibn Sīnā, known in the West as Avicenna, was perhaps the most important philosopher of the Islamic tradition as well as an accomplished physician. He was a prolific author whose writings on a range of critical topics in metaphysics, ontology, epistemology, and psychology became a major influence in Western philosophy through his influence on Thomas Aquinas. Avicenna’s massive medical work, the *Canon of Medicine*, completed in 1025, was the standard medical reference work in Europe and in the Arab world until at least the seventeenth century.

Avicenna was the son of a Persian tax collector and demonstrated a formidable memory and intellect at a very early age. By the age of sixteen he was a practicing physician. Over the course of his life, he served as a judge, a teacher, a political administrator, and as a physician and vizier in several royal courts. Given how busy he was in practical affairs, one may wonder how he managed to be so productive as a scholar. In his autobiography, Avicenna claimed that much of his writing was done on horseback during military campaigns.

In psychology, Avicenna developed the “floating man” thought experiment as a means to explore self-awareness. The experiment asks us to imagine we are floating in the air without any contact with our senses; Avicenna argues that we would still know we exist. Such self-consciousness, he concludes, indicates that the soul, or self, is separate from the body.

Book 1 of the *Canon of Medicine* addresses the interplay between mind and body in health. In it, Avicenna adapts the old notion of the four humors and posits four temperaments that interact with them. Mental and emotional habits influence our physical health, he argues, but the body also influences our mind and emotions. Thus exercise will have a beneficial effect on our mental and emotional health. In this, he anticipated some of the tenets of modern health psychology.

SEE ALSO Psychosomatic Medicine (1939), Psychoneuroimmunology (1975), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)

This page from a fourteenth-century copy of Avicenna's Canon of Medicine *describes several internal organs, as well as the skull and bones.*

Bedlam

1357

The first “lunatics” were admitted to Bethlem Hospital in central London in 1357, and sometime in the next century it began to specialize in the care of the insane. Until the eighteenth century, Bethlem Hospital was the only institution for the insane in England.

Before the seventeenth century, the mad were usually kept by family members at home or allowed to roam the countryside; by the 1600s mentally ill vagrants were given the name Tom O’Bedlam, after the popular poem of the same name. When a mad person was institutionalized—and this was relatively rare in Europe until much later—the treatments that existed were based on the ancient **Humoral Theory**, which asserted that health was regulated by the balance of the four humors, or fluids, in the body: blood, phlegm, black bile, and yellow bile. When there was an excess of one or more of these humors, madness, characterized by emotional and behavioral disturbances, ensued. Thus treatment —bleeding, cold baths, leeching, and purging—was intended to keep these humors in balance. For the most part, however, the mad were not treated and were simply part of the community.

By the sixteenth century, Bethlem Hospital had become a dreadful place, and its shortened name, Bedlam, was a synonym for “a scene of mad confusion or uproar.” By the early 1700s, admission—according to John Strype’s *A Survey of the Cities of London and Westminster* (1720)—was restricted to those “that are raving and furious, and capable of Cure; or if not, yet are likely to do mischief to themselves or others; and are poor.” Later in the eighteenth century, a popular amusement was a visit to Bedlam, where one could observe the mad for a penny.

The model of care represented by Bedlam was superseded by a change in the conceptualization of madness, as some thinkers during the Age of Enlightenment put forth the idea that madness was due to a loss of reason rather than an imbalance in the humors.

SEE ALSO Moral Treatment (1788), Antipsychotic Medications (1952)

The Madhouse, *scene from* A Rake's Progress, *a series of paintings by William Hogarth that follows the decline of the spendthrift Tom Rakewell, c. 1732.*

Da Vinci on Neuroscience

1489

Leonardo da Vinci (1452–1519)

Leonardo da Vinci is typically considered one of the greatest artists of all time. His Mona Lisa (1503–1506) and *The Last Supper* (1495–1498) stand among the most celebrated works of art in human history. As is well known, Leonardo was also an inventor and engineer whose designs for flying machines, irrigation systems, and weapons, among many other items, were far ahead of his time, as were his architectural drawings and city-planning designs. What is not as greatly appreciated is his work on the brain and sensory physiology, as well as the resulting psychology.

Leonardo sought to understand the underlying physical basis for how the body and the mind function in order to express exactitude in his art. In his earliest anatomical drawings, executed in the years around 1489, Leonardo delineated the brain structures where sensory input comes together, the *senso comune.* Here, he argued, was the seat of the soul and the origin of human judgment. He returned to the anatomy of the brain some years later, pioneering the practice of injecting wax into the ventricles in order to obtain accurate models for his drawing. Leonardo then described how fantasy, imagination, and cognition were related to specific brain sites.

Leonardo's studies in sensory physiology were remarkable. It is not surprising that vision was central, as he thought of the eyes as the windows of the soul. Although not published in his lifetime, several of his notebooks were filled with studies of light, the eye, and potential mechanisms of visual perception. He was among the first to argue that vision was a matter of light entering the eye and then being transmitted to the brain. Similarly, his studies of smell and touch were well ahead of his time.

The painter of the enigmatic *Mona Lisa* was a careful observer of the world, the body, and the human soul. He was a scientist of the arts.

SEE ALSO *Cerebri Anatome* (1664), Localization of Brain Function (1861), Brain Imaging (1924)

In this drawing, Leonardo da Vinci compares the human scalp to an onion.

Mona Lisa, *c. 1503–1506, oil on poplar wood. Da Vinci brought the same precision and mystery to his drawings of the nervous system as to his most popular works.*

Psychology as a Term

1506

Marko Marulić (1450–1524)

Human beings have pondered psychological questions for millennia. But the first use of the term *psychology* in the modern sense occurred in 1506, when the Renaissance scholar Marko Marulić, from what is modern-day Croatia, used the term in his *De Institutione Bene Vivendi per Exempla Sanctorum*, a collection of moral studies. In 1524, Marulić used the word in the title of his book *Psichiologia de Ratione Animae Humanae* (*The Psychology of Human Thought*). Over the next two centuries, the term appeared in both scholarly and popular volumes, thus laying the groundwork for its use as a scientific and professional term. Most uses of the term and its variants included notions about the human soul and human nature that drew upon both theological and philosophical traditions.

In German-speaking countries during the sixteenth and seventeenth centuries, scholars such as Philipp Melanchthon, Johannes Thomas Freigius, Rudolphus Goclenius, and Otto Casmann referred to psychology, or *psychologia*, in some of their scholarly writings. For example, Melanchthon's widely used book, *Commentary about the Soul* (1540), was concerned with human nature and psychological functions. It was intended, he wrote to a friend, to "assist [professors and students] them in acquiring scientific knowledge in this field." While Melanchthon took a philosophical approach to human psychology, others used the term more broadly. For example, in 1588 a volume was published in Paris with the title *Psychology: The book about the reality of spirits, knowledge of erring souls, phantoms, miracles and strange happenings.*

The eminent German philosopher and polymath Christian Wolff distinguished between two methods of psychological inquiry in his *Psychologia Empirica* (1732) and *Psychologia Rationalis* (1734), which conceptualized "psychology as a science of the soul." His work provided an important transition to the later development of psychology as a science.

The philosopher and encyclopedist Denis Diderot made the French term

psichologie popular when he included an essay on it in his well-known *Encyclopédie* (1751–1772). By the early nineteenth century, *psychology* began to be used in American college textbooks.

SEE ALSO Kant: Is Psychology a Science? (1781), Experimental Psychology (1874)

Bridge of Sighs, Oxford University. Much of the early work on psychology in the English language took place at Oxford and Cambridge, done by leading figures such as John Locke, John Wilkins, and Thomas Willis.

The Protestant Self

1517

Martin Luther (1483–1546)

When the Catholic monk Martin Luther wrote his *Ninety-Five Theses* in 1517, condemning the practices of the Catholic Church, he set into motion momentous changes, not only in religious practices but also in the understanding of human identity. Each person now stood alone before God, each person's justification was through faith alone, and one's relationship with the deity was defined in personal terms. By contrast, salvation, in the Catholic faith, was mediated by the church; thus the individual identity was submerged in the collective identity of church membership.

While Luther's immediate aim was to challenge what he considered false practices by the church, the consequences of his actions spread far beyond the church and matters of religion. The implications of the Reformation contributed to a new sense of self. The emergent Protestant faith demanded that its followers focus on their inner lives and devote themselves to spiritual practices. The emphasis on a personal, private relationship with God facilitated a need to pay attention to one's thoughts and emotions, thus increasing a sense of subjectivity. The practices of everyday life attained a new importance, as one's faith was manifested as much in the way one conducted business and attended to the tasks of daily living as in the number of times one attended church. New tools, such as conduct books and diaries, were introduced to help Christians maintain their personal relationships with God.

The most popular devotional aid was the conduct book, which was filled with maxims and proverbs meant to guide spiritual reflection and help each person judge his or her own spiritual progress. Both conduct books and diaries were ways to help the believer pay careful attention to the inner life and so enhance self-control of sinful thoughts and impulses. The emphasis on a personal, private relationship with God and its maintenance helped facilitate a sense of inwardness, of the need to pay attention to one's interior life, thus increasing a sense of subjectivity, which helped pave the way to modern psychology and its

emphasis on the private self.

SEE ALSO Montaigne's *Essays* (1580), *Leviathan* (1651), Tabula Rasa (1690), *The Familiar and the Novel* (1719), *The Theory of Moral Sentiments* (1759), *The Organism* (1939)

Christian Reading in His Book, *an illustration by English poet and printmaker William Blake, appearing in a nineteenth-century edition of John Bunyan's* The Pilgrim's Progress *(1678). This monumental Christian allegory encouraged newly literate Christians to focus on their private, interior lives, which helped eventually to create a sense of a psychological self.*

De Anima et Vita

1538

Juan Luis Vives (1492–1540)

The Spanish philosopher and protopsychologist Juan Luis Vives was friends with some of the great thinkers and figures of the late Renaissance. He counted Erasmus and Thomas More among those in his intellectual circle, while also being friends with England's Henry VIII and his first wife, Catherine of Aragon.

Vives was born in Valencia, Spain, into a Jewish family that had converted to Christianity, probably under the pressure of the Spanish Inquisition. Vives was educated in Christian schools and, at age seventeen, departed Valencia to enter the University of Paris. He left the university after completing a three-year arts degree, disgusted with the constant bickering between civil and secular authorities.

Vives moved to the Netherlands, which at that time was the most progressive and liberal society in Europe, and spent several years on the faculty of the University of Louvain. The freedom of thought and practice he found there encouraged Vives to develop his own philosophy about the operations of the mind and emotions. He was befriended by the great scholar Erasmus and became part of the wider circle of humanistic philosophers and thinkers across western Europe. He moved to Oxford University, where he taught from 1523 to 1528. In 1528 Vives returned to the Netherlands, where he remained until his death.

Vives's great philosophical and psychological work was *De Anima et Vita* (1538). In the volume, Vives laid out his argument regarding the influence of emotions on our thinking and health. He was one of the first to argue that personality, or temperament, is influenced by both our macroenvironment (climate, physical geography) and our microenvironment (the immediate context of family, friends, and others). He also explained what he saw as the role of emotions in forming our memories. In addition, Vives was a pioneer in education. He lobbied forcefully for the education of women and for the poor. Education for all, he believed, was necessary for a healthy society.

Vives has been acknowledged by scholars as influencing the writings of

Descartes and John Locke, and for important contributions to understanding the interplay of emotions and memory.

SEE ALSO Mind-Body Dualism (1637), Tabula Rasa (1690)

An anonymous portrait of Juan Luis Vives.

Montaigne’s *Essays*

1580

Michel de Montaigne (1533–1592)

“I am myself the subject of my book,” declared Michel de Montaigne in the introduction to his collection of essays. At the time that Montaigne wrote this, it was an unusual declaration to make. Most public writing was about theological or scientific subjects, or some mixture of the two. But Montaigne made his life the topic—a subject, he declared, “in regard to which I am the most learned man alive.” In writing this way, Montaigne foreshadowed our modern sense of self and personal identity.

Modern psychology takes for granted a personal sense of individuality and a private, interior life. This has not always been the case. Our sense of self, as a personal “I” at the center of our own worlds, has slowly developed through changes in philosophy, medicine, religion, and everyday practices. Published in 1580, Montaigne’s *Essais* was an important early contributor to this sense of self.

The essay as a form of writing was invented by Montaigne. It was an ideal genre in which to account for his experience. Why invent a new form? Montaigne was educated as a lawyer, but retired from practice when he was only thirty-eight years old. He lived at a time of intense conflict between Catholics and the new Protestant faith. Nations went to war over matters of religion, and religious persecution was present everywhere. The claims for knowledge and certainty based on religion, Montaigne concluded, only led to more conflict and bloodshed, and he became skeptical of governments, customs, and the supposed superiority of humans over animals. Montaigne pointed out that human experience is always changing; thus knowledge is always changing, too.

Montaigne developed the essay as a way to account for his changing experience. In giving his account, he made it possible for others to think of their own individual experiences as valid ways of making sense of the world.

SEE ALSO Mind-Body Dualism (1637), *Leviathan* (1651), Tabula Rasa (1690), The Familiar and the

Novel (1719), *The Theory of Moral Sentiments* (1759)

Anonymous portrait of Michel de Montaigne.

The frontispiece from a 1595 edition of Montaigne's Essays.

The Anatomy of Melancholy

1621

Robert Burton (1577–1640)

The great English scholar, raconteur, and coffee enthusiast Samuel Johnson once remarked that Robert Burton's treatise on melancholy was the only book he ever wanted to get up early to read. Its author was an Oxford don, given to a life of quiet scholarship. Apart from some early poetry and drama, Burton's life was devoted to *The Anatomy of Melancholy*; originally published in 1621, it appeared in six editions. Burton was an acute observer of life in early seventeenth-century England, when it was fashionable to be melancholic, and he personally struggled with his own sense of despair.

The Anatomy of Melancholy is important because it allows us to look both backward and forward. Burton drew upon the learning of the ancients. He cites Aristotle and employs the **Humoral Theory** of Hippocrates and Galen, which posits that melancholy is a function of an excess of black bile. He also relies on almost every possible source of his time, including philosophy, alchemy, and literature. In addition, the book points to the future, when melancholy was perceived as a mark of creativity and genius, as well as to our modern period, when classification of mental disorders became important and discussion of gender differences became common.

Even today, the book raises questions about the nature of melancholy. Are we to understand that *melancholy* is the older word for "depression"? Is depression only biological, or must we consider how cultural context shapes our understanding and expression of mood?

SEE ALSO Humoral Theory (c. 160 CE), American Classification of Mental Disorders (1918), Antidepressant Medications (1957)

Melencolia I *by German Renaissance painter Albrecht Dürer, 1514. Melancholia is depicted here as native to the artistic temperament.*

Mind-Body Dualism

1637

René Descartes (1596–1650)

In the seventeenth century, a new understanding of the natural world placed humans and their abilities within a framework of natural law. The writings of the French philosopher René Descartes, especially *Discourse on the Method* (1637), became a resource for these efforts.

As a philosopher, Descartes sought to remain true to the Catholic Church while searching for a natural understanding of the human mind and body. Catholicism held that the mind is under the direct influence of God; thus the soul is distinct from the body and cannot be explained as only part of nature. To avoid conflict with the church, Descartes proposed a mind-body dualism in which some mental functions could be considered properties of the body rather than the soul. Claiming that memory, perception, imagination, dreaming, and feelings were bodily processes meant that they could be investigated and understood by humans as part of the natural order.

Descartes drew on earlier discoveries in medicine, such as William Harvey's description of the heart as a pump (1628), and from the work of craftsmen who created objects that worked mechanically, such as those in the royal gardens outside Paris. There, hydraulic pressure activated statues when visitors stepped on hidden plates, making it seem as if they moved on their own. Descartes used the principle of mechanical movement as a model for how we can understand memory, dreaming, and other mental acts without relying on divine Providence. Descartes theorized that the mind and body interact via the brain's pineal gland, which receives bodily impressions and transmits movement to the body. This preserved the soul as the seat of reason and kept it as the special province of divine influence.

Descartes's approach fit with both the teachings of the Catholic Church and the new mechanical philosophy. In articulating this division between mind and body, Descartes left a legacy that helped later thinkers consider humans part of the natural, rather than supernatural, order.

SEE ALSO Tabula Rasa (1690), *L'homme machine* (1747)

Example of an automaton, which Descartes cited as an illustration of how the human body could be understood to operate mechanically, in the Centre International de la Mécanique d'Art (CIMA).

Leviathan

1651

Thomas Hobbes (1588–1679)

English philosopher Thomas Hobbes played an important role in laying the groundwork for a psychology of the individual. His books, especially *Leviathan* (1651), were predicated on a society made up of self-aware and self-centered persons. Hobbes foreshadowed and perhaps stimulated the possessive individualism of our time, which is necessary for psychology. Why did he focus on the individual?

During the early modern period, humanity's place in nature became a critically important topic among philosophers, theologians, and educated people generally. This was an era in which our contemporary psychological sensibility began to emerge as a result of important changes in human society. Hobbes wrote in a time marked by prolonged wars and critical challenges to received religious truths and established political order. New developments in science were placing knowledge of the natural world in a human framework rather than referring all to divine agency. In addition, there was immense social change brought about by the beginning of a massive shift in population to urban centers.

Hobbes argued for a new social contract based on an assumption that all life is entirely material, not spiritual or metaphysical; thus there is no need to believe in spirits or angels. He explained life materially, "for what is the heart but a spring; and the nerves, but so many strings." Only the physical exists, and our actions are determined by material causes. Because we all share this nature, we have a common basis upon which to build a better society, but we do so based on our own interests. In order to keep our selfish impulses in check, Hobbes argued for a strong government. Without a strong monarch—or Leviathan, in Hobbes's terminology—our common lives would devolve into a "war of all against all," and life would be, in his famous statement, "solitary, poor, nasty, brutish, and short."

SEE ALSO The Protestant Self (1517), Montaigne's *Essays* (1580)

Frontispiece to Leviathan *by Thomas Hobbes, 1651.*

Cerebri Anatome

1664

Thomas Willis (1621–1675)

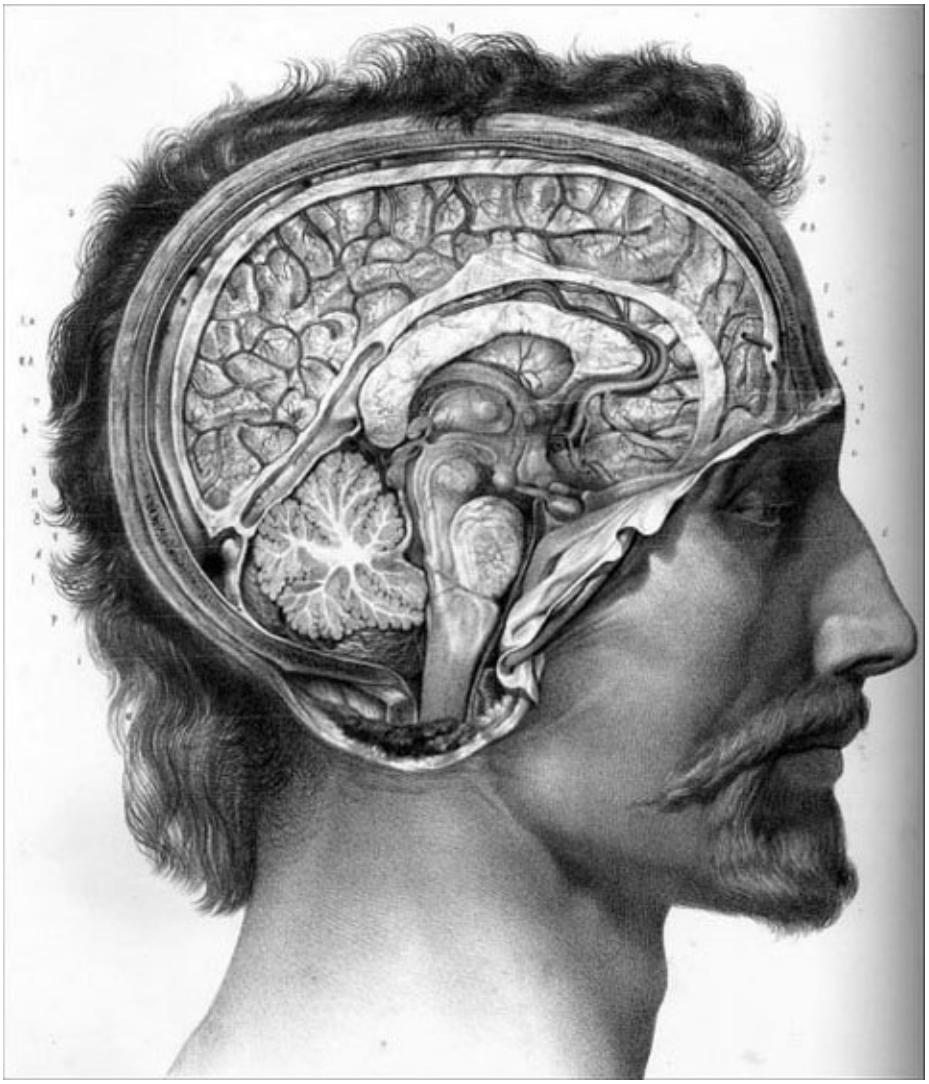
In *Cerebri Anatome* (“Anatomy of the Brain”), physician and anatomist Thomas Willis laid much of the foundation of modern neurology and psychiatry, coining the term neurologie in the volume. He sought, as he wrote to a friend, “to unlock the secret places of Man’s Mind.” The writings of Willis on the brain in both its normal and pathological state were immensely influential in his own time and helped redirect the study of the brain in the direction of our current understanding. For example, within a year of its publication in English in 1664, *Cerebri Anatome* went through four Latin editions, and five more editions followed over the next few years. The book was actually a collaboration between Willis and several of his colleagues, including the noted architect and artist Sir Christopher Wren, who provided the engravings for the volume.

Willis was educated at Christ Church, Oxford, and remained in Oxford until his move to London in 1667. He was intimately involved with the new experimental philosophy that was emerging then. Willis’s specialty was chemistry and the blood, but about 1660, his interests shifted to neuroanatomy and neurology.

As he followed his new interests, Willis brought to them the same careful observation and vast learning that had marked his career to date. Willis viewed the brain as “the chief seat of the Rational Soul in a man … and as the chief mover in the animal Machine,” and engaged Christopher Wren and others to work with him on what would become *Cerebri Anatome*. In the book, he used the format of comparative anatomy that had been pioneered by physician and anatomist William Harvey in his work on the circulation of blood. Willis used examples from both nonhuman vertebrates and invertebrates to inform his argument about the brain’s anatomy and related functions. He also used patient case histories and postmortem anatomies to support his conclusions. In addition to neuroanatomy, the book also described and illustrated the cranial, spinal, and autonomic nerves. Together with *Pathologiae Cerebri* (1667), which extended

his analysis to brain disorders, *Cerebri Anatome* offered the first comprehensive account of the brain and nervous system in Europe.

SEE ALSO Mind-Body Dualism (1637), Localization of Brain Function (1861), Mirror Neurons (1992)



This anatomical drawing from Anatomie de l'Homme (1831–1854) *shows a cross-section of the brain.*

Tabula Rasa

1690

John Locke (1632–1704)

How do we gain knowledge? For the English philosopher John Locke, this was a fundamental question for which the answer was human experience. In his major work, *An Essay Concerning Human Understanding* (1690), Locke rejected the notion of innate ideas and argued that all ideas come through experience. Thus, at birth the human mind is a tabula rasa (Latin for "blank slate") on which sensory experiences are inscribed, and its contents are those ideas that come from experiences. Knowledge, then, is a matter of the mind gathering experiences and ideas from the material world. Locke proposed a way in which we could understand how ideas could move from simple to complex through association. In doing so, he laid the foundation for empirical philosophy and, much later, the new science of psychology.

What motivated Locke to propose such a new and radical approach? When he was only ten years old, religious and political differences between the king and Parliament led to civil war, and for nearly twenty years, daily life was dangerous and full of conflict. He wanted to find a better basis for social life, and he thought he could help create conflict-free society by encouraging people to form clear and distinct ideas that were not based in political or religious excesses.

Why is this important for us today? In addition to sparking a **Nature versus Nurture** debate that extends to this day, Locke's idea helped make it possible to think about human behavior in terms of natural law rather than divine intervention, ultimately making a science of psychology possible.

SEE ALSO *The Theory of Moral Sentiments* (1759), Nature versus Nurture (1874), Behaviorism (1913), Enriched Environments (1961), Stanford Prison Experiment (1970)

Christ Church, Oxford University, where Locke was educated and where he taught early in his career.

The Familiar and the Novel

1719

Daniel Defoe (1660–1731), **Samuel Richardson** (1689–1761), **Henry Fielding** (1707–1754)

People have written letters and told stories for thousands of years. But in the early eighteenth century, two new forms of written communication appeared that reflected and contributed to the new sense of self and private life that was emerging in various places across Europe. One was a new kind of personal letter, and the other was the novel, an innovative form of popular entertainment meant for public consumption. Both genres reflected an increase in literacy.

Because of migration and work, family members were often geographically distant from one another. In this era, letters took on a new importance as they became the means through which personal experiences, sentiments, and intimate thoughts were expressed. This type of communication, meant to express affection and closeness among family and friends, came to be called the "familiar letter." Thus, letters became a medium through which individuality could be asserted and were increasingly personalized and private.

In the first half of the eighteenth century, the novel appeared as a new form of literary art in England. In and out of debtor's prison, Daniel Defoe, a sometime merchant and pamphleteer, wrote the first novel, *Robinson Crusoe,* in 1719. Within a few years, *Pamela* (1740), by Samuel Richardson, and *Tom Jones* (1749), by Henry Fielding, were published.

The novel as a literary form reflected the new emphasis on personal life and the importance of the everyday. In these new literary forms, the characters had everyday names, and their subject matter was everyday life—the twists and turns of recognizable people in situations with which many readers could empathize. The thoughts and emotions of the characters were placed in the foreground, so that readers could recognize their own thoughts and emotions in the characters they read about. The net result was greater attention to the ordinary, the mundane, and the subjective.

SEE ALSO The Protestant Self (1517), Montaigne's *Essays* (1580), *The Theory of Moral Sentiments* (1759)

"Robinson Crusoe Taking a Survey of the Island," an illustration by Alexander Frank Lydon in an 1865 edition of Robinson Crusoe.

L’homme machine

1747

Julien Offray de La Mettrie (1709–1751)

René Descartes proposed that the mind and body must be understood as separate. The mind is immaterial, and its reasoning is due to divine influence; thus the soul or mind cannot be reduced to materiality or explained in terms of mechanics. On the other hand, Descartes also proposed that such seemingly mental functions as memory, perception, imagination, dreaming, and feelings were actually properties of the body and thus subject to natural law rather than divine influence. This is the basis of **Mind-Body Dualism**.

In the aftermath of Cartesian dualism, other philosophers argued that all mental functions are actually caused by the mechanics of the body and, therefore, are amenable to explanation in terms of natural, physical processes. In his provocative book *L’homme machine* (1747), Julien Offray de La Mettrie, a French army surgeon, offered a radical explanation. In the book, La Mettrie argued for a purely materialistic view of human beings—a view that, in fact, equated human nature with physical nature. This, he said, was implicit in Descartes’s argument. Thus animals and man were to be understood in mechanistic or materialist terms.

La Mettrie evidently developed his materialistic explanation of mind as a result of observations made when he was seriously ill with a fever. He concluded from this experience that changes in the brain and nervous system actually cause changes in psychological processes. Consequently he rejected the division of soul (mind) and body and concluded that human mentality is based entirely in the physiology of the body. Along with that of Descartes, his work was important in the transformation from older conceptions, which placed humans at the apex of creation—“a little lower than the angels”—to the modern understanding of human beings as subject to the laws of nature.

SEE ALSO Mind-Body Dualism (1637), *On the Origin of Species* (1859)

Detail of Flute Player, *an automaton built by Italian inventor Innocent Manzetti in 1849.*

The Theory of Moral Sentiments

1759

Adam Smith (1723–1790)

When did our contemporary sense of a private self with a rich interior psychological life emerge? In addition to the Scientific Revolution, the Protestant Reformation, changes in family life, and a new understanding about the natural world, we must consider the emergence of "commercial society" as a catalyst. This term refers to a society in which people and their relationships are defined by their interactions in the marketplace: what they produced, bought, or sold.

How did commercial society help create a private self where people felt their interior lives to be unique? The Edinburgh philosopher Adam Smith suggested how this might happen in two of his books, *The Theory of Moral Sentiments* (1759) and *The Wealth of Nations* (1776). Smith argued that commercial society creates obligations among people in the exchange of goods, which can include labor that could be bartered for goods produced by the labor of others. Commercial society thus consists of individuals who are motivated to look after their own material interests. But why does this not always produce chaos?

In commercial, capitalist societies, an individual has to consider the consequences of his or her actions; that is, once a promise is made about an exchange of merchandise and the price, failure to deliver or receive the goods might put future relations in jeopardy. Conscience, Smith argued, plays a necessary role in equal human commercial interactions. Conscience is psychological; it requires an inward sense of self, and therefore its presence increases subjectivity and self-regulation—Smith's famous "invisible hand." For Smith, we do act out of our own interests, but we also have to think of others, what Smith called "moral sentiment." It is moral sentiment that makes society possible. Leaving aside questions about the negative aspects of capitalist society, we can see that the emergence of the market contributed to a sense of a private self.

SEE ALSO The Protestant Self (1517)

Detail of a very old cash register, a nineteenth-century invention, with keys that display pre-decimal values. With the emergence of a commercial society, such devices became commonplace, as did the notion of the private self.

Rousseau’s Natural Child

1762

Jean-Jacques Rousseau (1712–1778)

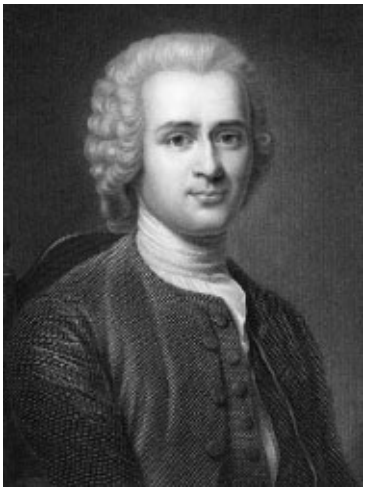
The Swiss-born French philosopher Jean-Jacques Rousseau drew upon a variety of sources, including travelers’ reports from the Americas, to imagine the human condition prior to society. He thought that humans lived in noble simplicity in that earlier state: the natural child is born good and corrupted by society. He asked, “What type of misery there can be for a free being whose heart is at peace and whose body is healthy?” For Rousseau, human behavior is best guided by our emotions rather than by reason. In this, he is a forerunner of romanticism, with its emphasis on subjectivity.

The emphasis on an original human state of goodness led Rousseau to propose in *The Social Contract, or Principles of Political Right* (1762) that although humans are oriented to their own well-being, they also do not wish to see their fellows suffer. Social life is thus possible because of sentiment or fellow feeling, even though social life does not accord with the freedom of the individual.

Because we are born good but must live in society, Rousseau argued that education was the only route to minimize corrupting social influence and perfect our natures. Thus he became an advocate of developmentally appropriate education for children, rather than one that treated them as little adults. In his novel *Émile, or On Education* (1762), Rousseau divided human development into three stages, each with unique age-related characteristics. In doing so, Rousseau rejected the educational practices of his day with their emphasis on rote learning and argued instead for education based on the natural curiosity of the child. In this approach, education stimulates the mental and moral development of the child.

Rousseau’s educational model is clearly psychological. His ideas influenced the nineteenth-century educational psychologies of Johann Pestalozzi and Friedrich Froebel and, through them, the innovative twentieth-century educational psychologies of Lev Vygotsky and Jerome Bruner.

SEE ALSO Victor, the Wild Boy of Averyon (1801), Kindergarten (1840), Casa dei Bambini (1907)



An engraving of Rousseau, 1833.

Statue of Rousseau in Geneva, Switzerland.

Mesmerism

1766

Franz Anton Mesmer (1734–1805)

Like other theorists of his era, the German physician Franz Mesmer accepted the idea that the stars and the planets were constantly influencing human life, including a person's health. In his doctoral dissertation, written in 1766, Mesmer suggested that illness was a result of adverse planetary influence on the fluids in the human body and that healing was a matter of restoring this balance through what he called *animal magnetism.* Over time, Mesmer refined his treatment techniques. He began by asking patients to handle iron bars that had been magnetized. As his renown grew, he believed that he could use his own animal magnetism to magnetize any object—plant, book, cloth, and so on—and these items could work, even at a distance, to restore magnetic equilibrium within his patients. Later in his career, Mesmer believed that his touch or a glance from him could restore patients' balance and bring healing.

After Mesmer was discredited in Vienna over his treatment of a talented young blind girl, he arrived in Paris in 1777. Soon he was treating wealthy ladies, including Marie Antoinette. There he introduced group treatment in a special room, where music played softly and seated patients held magnetized iron rods. Mesmer, clothed in royal purple, strode into the room and lightly touched the patients, usually provoking cries, convulsions, and even fainting. Many patients reported that they were cured by this treatment. Once again, Mesmer was rejected by the medical establishment, this time after a royal commission (which included Benjamin Franklin, then ambassador to France) concluded that any effects were due solely to his patients' imaginations.

Although Mesmer was discredited, his ideas lived on, undergoing many refinements over the nineteenth century with two very important results. First, the practice of hypnotism grew out of mesmerism. Second, Mesmer's work led to new theories about the unconscious and prepared the way for Freud's **Psychoanalysis**.

SEE ALSO Physiognomy (1775), Phrenology Comes to America (1832), Psychoanalysis (1899)

This Kirlian photograph captures the electrical coronal discharges of an index finger.

Physiognomy

1775

Johann Kaspar Lavater (1741–1801)

Physiognomy is part of the long history of human beings “reading” the physical body as a way to understand themselves and others. In the Western world, as the power of exact sciences grew to explain more and more natural phenomena, the reliance on such earlier systems declined but did not disappear. Especially for those without access to education and formal learning, the body remained a resource for interpreting the world. This was the case during the Industrial Revolution as modes of life changed from rural and small town to urban, and from farm labor or small shop employment to factory life.

Physiognomy was an ancient system of understanding human character that was revived and popularized in the late eighteenth century by the Swiss pastor Johann Kaspar Lavater. He created a systematic effort to link the outward appearance to inner character and ability. Lavater published his physiognomic system in four well-illustrated volumes (1775–1778), which remained in print for over a century. The illustrations could be used by anyone to discover their dispositions and abilities, which were later called personality and intelligence.

Lavater proposed that his system could help people understand their own nature and feelings, as well as those of others, thus making self-and social management easier. Because its target was the inner life of the person, physiognomy played the role of everyday or practical psychology and prepared societies for the emergence of scientific psychology.

Physiognomy appealed to people in all stations of life, from elites like the philosopher Immanuel Kant to novelists like Jane Austen to uneducated nonelites. For novelists, the use of physiognomic language served as a shorthand for explaining their characters. Although physiognomy and its younger offshoot, **Phrenology**, would inevitably be used by some to justify the superiority of certain ethnic groups, it also created a psychological language with which to understand themselves and their neighbors’ feelings, similarities, and differences.

SEE ALSO Palmistry (c. 5000 BCE), Phrenology Comes to America (1832), Somatotypes (1925)

An engraving of Johann Kaspar Lavater.

"Method of Silhouetting" from Lavater's Essays on Physiognomy, *1789. The silhouette was one way of clearly examining the facial features that were so important for determining the physiognomic character of a person.*

Kant: Is Psychology a Science?

1781

Immanuel Kant (1724–1804)

Although he spent his entire life in the small city of Königsberg, Germany, Immanuel Kant is often considered the greatest philosopher in the Western intellectual tradition. For the discipline of psychology, Kant presented a formidable challenge when he insisted that the mind could not be studied in the same way that the natural sciences approached their subject matter.

Kant's argument challenged scientists who were interested in the mind and sought to explore it experimentally. To meet the challenge they had to deal with Kant's theory of how we know the world. In his 1781 book *Critique of Pure Reason*, Kant proposed that there are two separate domains of reality: the noumenal world and the phenomenal world. The former is external and consists of objects in a pure state, or things-in-themselves, which exist independent of human experience. When our minds perceive these, they are transformed into phenomena that our minds categorize for us.

Herein lies the essence of Kant's challenge: Kant's position implies an active, rather than passive, mind. His theory indicates that the role of the mind in structuring our experience uses certain rules—twelve a priori categories—to organize the phenomena, not because the world is actually so organized but because the mind is set up to structure its experience of the world in that way.

Why would this contention not open the door to a psychological science? Because, Kant argued, mental processes exist in time but have no spatial dimension. This, he reasoned, means that the way the human mind works cannot be expressed mathematically. And since mathematics is the mark of true natural science, then psychology could not be a science; thus psychology can only be a historical and descriptive discipline. Before the end of the nineteenth century, Kant's challenge was met by scientists who believed that they had found a way to experimentally measure the mind in action.

SEE ALSO Just-Noticeable Difference (1834), Sensory Physiology (1867), Mental Chronometry (1879)

Statue of Immanuel Kant, located in Kaliningrad, Russia.

Moral Treatment

1788

William Tuke (1732–1822), **Philippe Pinel** (1745–1826), **Vincenzo Chiarugi** (1759–1820)

Humans were recast as creatures of logic during the European Enlightenment. Madness was reconceptualized as a result of a loss of reason rather than an imbalance in humors. With this, there was a subsequent change in the treatment of the mad: instead of bleeding or purging, treatment methods were intended to help restore patients to their reason. This was termed *moral treatment.*

The first moral treatment was initiated in Italy in 1788, where the physician Vincenzo Chiarugi instituted reforms that outlawed the use of chains and beatings, and he often used opium to calm patients. The French physician Philippe Pinel became the director of the Bicêtre Insane Asylum in Paris in 1792 and used Enlightenment principles to develop new policies of humane treatment, believing that such treatment would help restore reason. The patients were released from their shackles and treated with respect and dignity, with great success.

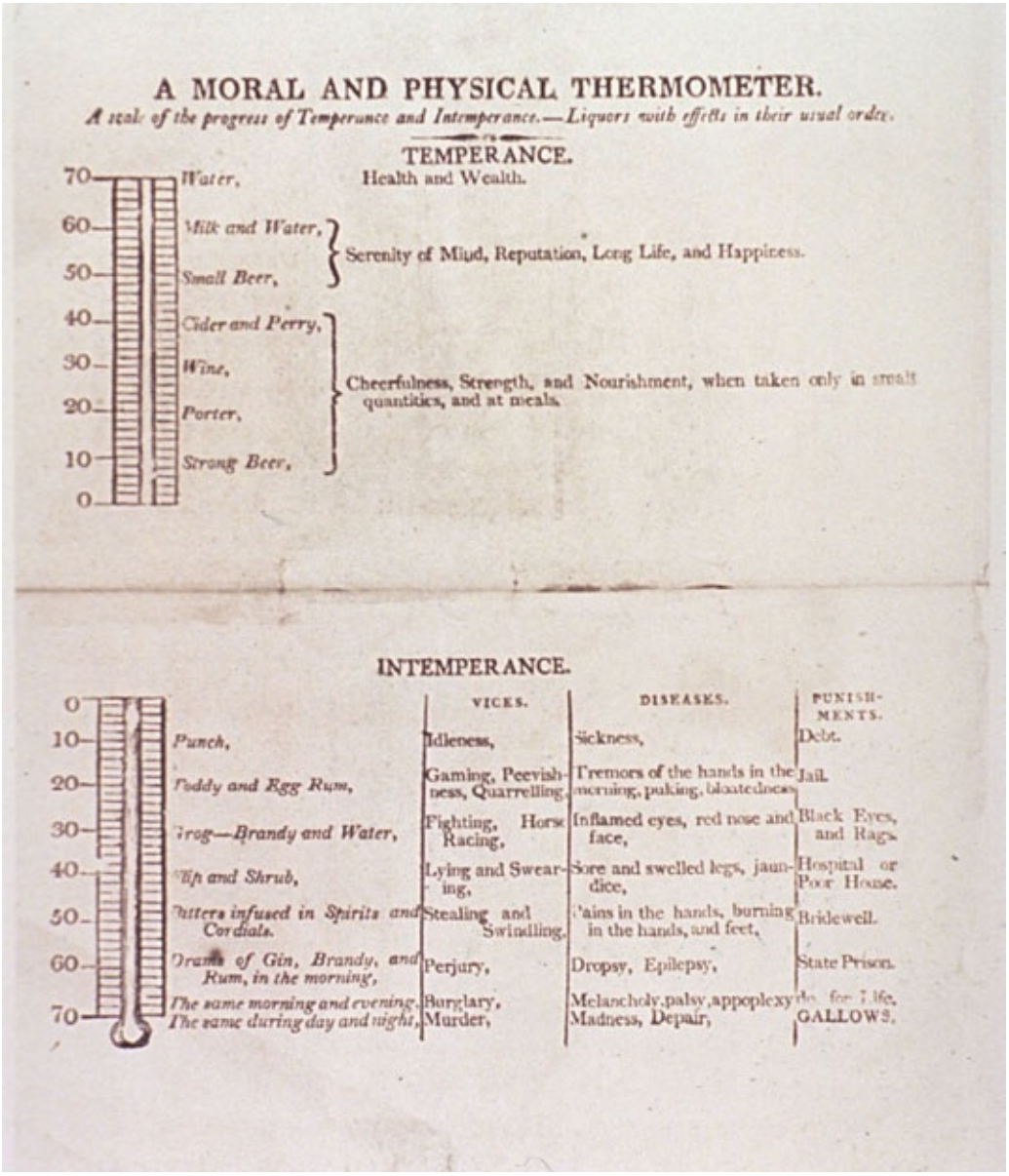
At about the same time in England, the Quakers, concerned about the treatment of members who were suffering from mental disorders, opened the York Retreat. Under the leadership of William Tuke, the retreat was organized with the belief that mental illness was a state from which a person could recover with the right treatment. The retreat's staff employed an attitude of benevolence and personal care, and they provided opportunities for patients to engage in useful tasks in order to nurture them back to health.

In the United States, alienists (precursors of psychiatrists) also adopted moral treatment, including new forms of restraint such as the crib, where the patient had to lie still because there was no room to move. The rationale was that as the patient calmed down, he would gradually be restored to his senses, and his reason would return.

By the 1830s, moral treatment was the standard of care in most American

asylums, and as long as the patient population was small, there were many successes. By the late nineteenth century, however, the asylum population had greatly increased while financial and community support for them decreased. Thus by the end of the nineteenth century the majority of asylums had become warehouses of the insane.

SEE ALSO Bedlam (1357), Antipsychotic Medications (1952)



Frontispiece, An inquiry into the effects of ardent spirits upon the human body and mind *by Benjamin Rush, 1812. Rush was one of the signers of the Declaration of Independence and one of the founders of moral treatment in the United States.*

Victor, the Wild Boy of Aveyron

1801

Jean-Marc-Gaspard Itard (1774–1838)

On a cold January day in 1800, a naked boy wandered shivering into a farmhouse in the south of France. Although he appeared to be about twelve years old, he could not speak, knew no human manners, and could not recognize his own reflection. It soon became clear that he had been living alone in the forests for several years, probably since about the age of five. As a feral child, Victor became a case study in the Enlightenment debates about the noble savage and the role of education in the civilizing process.

Victor was taken to Paris, where he was inspected by several experts, one of whom declared him a "congenital idiot." Not long afterward, Victor came under the care of the physician Jean-Marc-Gaspard Itard, who at the time was the director of the National Institute for Deaf-Mutes. Itard disagreed with the previous diagnosis, as he believed that the deficits Victor displayed were social in origin and could be remediated through socialization and education. Thus Victor became a test case for the power of education.

For five years, Itard and his assistant worked with Victor to teach him language and the ways of civilized life. He learned to eat prepared food, to dress properly, and to bathe. However, he never learned to speak. Itard had discovered what later experimental science has shown: there is a critical period for learning language, and once that period has passed, language is very difficult to learn.

On a conceptual level, Itard and Victor represented a new approach to studying human development. Itard prepared two reports on Victor, one in 1801 and another in 1806. Although Itard reluctantly concluded that his efforts to educate Victor had failed, his systematic methods were lauded by the French minister of education. The minister hailed Itard's reports as a new scientific approach to studying children that would also point the way to helpful interventions.

SEE ALSO Rousseau's Natural Child (1762), Kindergarten (1840), Casa dei Bambini (1907)

A thirteenth-century bronze sculpture of the Capitoline Wolf suckling twin infants Romulus and Remus, the legendary founders of Rome.

Bell-Magendie Law

1811

Charles Bell (1774–1842), **François Magendie** (1783–1855)

The question of whether it was possible to explain human intelligence in terms of natural laws rather than as an effect of divine influence became a major debate in the nineteenth century. This was the period when experimentation became the method of discerning truth, and the laboratory became the place where truth, through experimentation, was discovered.

The distinction between sensory and motor nerves, made independently by Scottish anatomist Charles Bell in 1811 and French physiologist François Magendie in 1822, helped make it possible to use experimentation to explore the psychological implications of nervous system functions. Both Bell and Magendie pointed out that each type of sensory nerve was specific to a particular sensory modality, such as vision, hearing, or touch. This discovery came to be called the Bell-Magendie Law, and it was an approach that German physiologist Johannes Müller used to develop the doctrine of specific nerve energies. Researchers who used the concept of specific nerve energies were then able to develop a mechanistic model of how the human nervous system functions and what its role may be in human thinking and action.

The scientific implications of experimentally distinguishing between the two types of nerves can be found in the study of reflexes. The English physiologist Marshall Hall used the sensory-motor distinction to show a specific connection between local nerve action and behavior. He used reflexes to describe behavior in terms of nerve action, without the involvement of higher mental processes. This challenged the mentalistic conceptions of human behavior, such as the one proposed by René Descartes, which held that since the brain and soul are equivalent and the soul directs human behavior, then there is no need for experimentation. Hall’s research implied that at least some aspects of human behavior are based on stimuli and responses at the physiological level, thus validating a role for experiments to help us understand the links between brain function and human behavior.

SEE ALSO Localization of Brain Function (1861), Sensory Phsysiology (1867)

This drawing from Sir Charles Bell's Manuscript of Drawings of the Arteries *shows "the most common and regular distribution of the branches of the carotid artery."*

Phrenology Comes to America

1832

Franz Joseph Gall (1758–1828), **Johann Spurzheim** (1776–1832), **Orson Fowler** (1809–1887), **Lorenzo Fowler** (1811–1896), **Samuel Wells** (1820–1875)

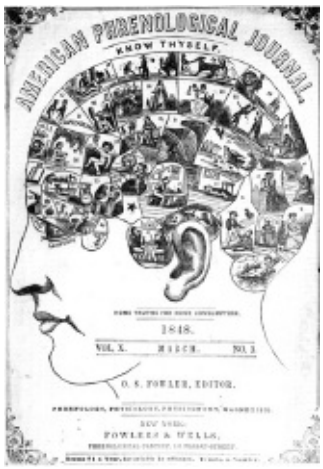
The Viennese physician Franz Joseph Gall developed a method of relating the bumps and protrusions of the skull to underlying brain structure; this method was soon termed *phrenology*. In 1832, Gall's student Johann Spurzheim brought phrenology to America, where it became immensely popular during an era of great interest in self-improvement. The public accepted and believed that personality and character could not only be studied scientifically but that the application of such study could lead to personal improvement.

A pair of enterprising brothers was particularly successful in capitalizing on the popular appeal of phrenology in America. The Fowler brothers, Orson and Lorenzo, along with their brother-in-law Samuel Wells, opened phrenological clinics in New York, Boston, and Philadelphia in the late 1830s. The purpose of the clinics was to give phrenological examinations, or readings, often in response to specific requests from clients; for example, parents might want insight into their children's behavior problems, or engaged couples might want to assess their compatibility. Traveling phrenologists also toured the country, announcing their circuit in advance of their arrival and renting space to deliver readings to eager customers.

The Fowlers and other trained phrenologists provided individualized advice manuals and eventually published a range of what we would now consider self-help books. Titles included *Phrenology and Physiology Explained and Applied to Education and Self-Improvement*, *The Phrenological Self-Instructor*, *and How to Read Character: A New Illustrated Handbook of Phrenology and Physiognomy*. At one point there were even plans for a phrenological vending machine that would provide character analysis through a self-administered test on a coin-operated machine!

Despite the enormous popular appeal of phrenology and the efforts of the Fowlers to establish its professional legitimacy, its scientific validity was criticized consistently. However, in numerous ways, phrenology prepared Americans for the emergence of clinical psychology, with its variety of tests and therapies to help people understand and improve their lives.

SEE ALSO Palmistry (c. 5000 BCE), Physiognomy (1775), Localization of Brain Function (1861), Eugenics and Intelligence (1912)



An 1848 edition of the American Phrenological Journal, *published by Fowlers & Wells, New York City.*

"The traveling phrenologist in the White Mountains, 'Yes, Miss, you've a very remarkable head, very.'" Wood engraving after a sketch by Joseph Becker, 1882.

Just-Noticeable Difference (JND)

1834

Ernst Weber (1795–1878), **Gustav Fechner** (1801–1878)

Many scholars in the eighteenth and nineteenth centuries believed that it was not possible to scientifically study the mind in part because mental processes could not described in mathematical terms. German physiologist Ernst Weber's study of touch, first published in 1834, led to research on the human ability to perceive differences in sensation. Research on detecting variations in weight and temperature led him to conclude that such distinctions could be described lawfully, or mathematically; he found that the second, comparative weight must be heavier by a proportion of the original, not by an absolute amount, in order to make an accurate discrimination. In the case of each sensory modality—touch, light, sound, and so on—the amount necessary to detect a difference was proportional to the original stimulus. Weber calculated the proportions and established what he called the just-noticeable difference, or JND, for each sensory discrimination. For example, the just-noticeable difference for weight discrimination was always an amount equal to one-thirtieth of the heavier weight.

In 1850, German philosopher and psychologist Gustav Fechner empirically demonstrated a lawful relationship between the physical and psychological worlds. His experimental approach to this problem came to be known as psychophysics. Building on Weber's work on the JND, Fechner reasoned that if the JND was a constant fraction for each of the senses, then it could stand as a unit of measurement representing the subjectively experienced intensity of a stimulus. By starting with the lowest intensity of a stimulus that could be perceived and then plotting each successive JND, Fechner discovered a mathematical law that allowed him to describe and predict the relationship between the physical world and our subjective experience of that world. Weber and Fechner proved that psychological phenomena could be described quantitatively.

SEE ALSO Sensory Physiology (1867), Experimental Psychology (1874), Mental Chronometry (1879)

The research of Gustav Fechner

Conclusively showed that the JND is represented by a logarithmic rather than a linear function, as shown in this image from Gustav Theodor Fechner *by Johannes Emil Kuntze, 1892.*

Moral Insanity (Psychopathy)

1835

Philippe Pinel (1745–1826), **James C. Prichard** (1786–1848), **Hervey Cleckley** (1903–1984), **Robert Hare** (b. 1934)

In the 1790s, the great French physician Philippe Pinel described an unusual kind of patient that he occasionally found at Paris's Hôpital de la Salpêtrière, where he served as director. These patients were deviant in their behavior but did not show any signs of intellectual impairment, and they were not psychotic, as they would have been if they were schizophrenic. Almost all of them were male. In 1835, the English psychiatrist James Prichard coined the term *moral insanity* to describe these individuals. He also noted these men were not cognitively impaired and were not delusional. Their insanity was in their behavior, and they appeared to act in almost complete disregard for normal feelings and the conventions of society.

In the mid-twentieth century, the US psychiatrist Hervey Cleckley coined the term *psychopathy* to describe the condition he found in a group of hospitalized male patients. His book *The Mask of Sanity* (1941) offered fascinating but chilling accounts of men who were extremely charming but completely amoral and without conscience. The psychopath was a person who wore a "mask of sanity," who outwardly appeared normal, charming, and gregarious, but whose behavior could be utterly destructive. The book captured the public imagination, and the phenomenon of psychopathy inspired such movies as *The Postman Always Rings Twice*, *Psycho*, and *The Silence of the Lambs.*

Cleckley used case-history descriptions to explain psychopathy. The Canadian psychologist Robert Hare developed the Psychopathy Checklist (1980) to aid in diagnosis. The twenty items on the list include promiscuity, impulsiveness, lack of remorse, superficial charm, pathological lying, and refusal to accept responsibility for actions.

The disorder is labeled "antisocial personality disorder" in the American Psychiatric Association's official classification handbook, *The Diagnostic and*

Statistical Manual of Mental Disorders (DSM). The DSM criteria describe a person with the disorder as deceitful, aggressive, and without remorse or loyalty, who constantly shows disregard for the rights of others.

A diagnosis of psychopathy has been found to be the single best predictor of preplanned violence against others.

SEE ALSO Bedlam (1357), The Schizophrenias (1908), American Classification of Mental Disorders (1918)

This illustration from Albert Moll's Handbook of Sexology *(1921) depicts one of history's most notorious psychopaths: Gilles de Montmorency-Laval, Baron de Rais, a prolific serial killer of children who was hanged for his crimes in 1440.*

Munchausen Syndrome

1838

Hector Gavin (1815–1855), **Richard Asher** (1912–1969)

A well-dressed young man shows up at an emergency room in a large city. He complains of severe, unrelenting gastric distress. Upon examination, the cause is determined to be ingestion of a toxic substance. While hospitalized, he regales the nurses and other patients with elaborate stories of past illnesses. One of the nurses recognizes him from another hospital. It turns out the young man has, in fact, poisoned himself, and this is not the first time he has been hospitalized for self-inflicted problems. He is suffering from a factitious (feigned) disorder called Munchausen syndrome, after German cavalry officer Karl Friedrich Hieronymous von Münchhausen, who reputedly greatly exaggerated his military exploits and heroic acts. Edinburgh physician Hector Gavin, later noted for his work on improving public sanitation, was the first to describe the symptoms of the disorder in 1838. It was given its name by the British physician Richard Asher in 1951.

Munchausen syndrome is not a common disorder, but it is a curious one. It is related to conversion disorder. Those suffering from it typically have a large fund of medical knowledge and often have worked in a hospital or a related setting. They may have a long history of therapeutic treatments by a variety of doctors and may have been hospitalized multiple times. To avoid detection, sufferers may use several different hospitals for their care.

Individuals with this disorder appear to be motivated by a desire for the attention of medical professionals. The goal may be to experience the secondary gain of the sick role, such as special care and extra consideration. Unlike hypochondria and other somatoform disorders, however, patients with Munchausen syndrome are believed to consciously and intentionally produce their somatic symptoms.

A bizarre and dangerous variant is called Munchausen’s syndrome by proxy. This is a condition in which a person (typically a caregiver) induces or invents a disorder in another person, such as a child or close relative. For example, a

parent may administer a drug or an infectious agent to his or her child and then seek care. In some cases, a parent may induce symptoms of mental illness in his or her child, but he or she is seeking attention for himself or herself and not the person who is ill.

SEE ALSO American Classification of Mental Disorders (1918), Psychosomatic Medicine (1939)

Baron von Munchausen's Ride on a Cannonball *by German artist August von Wille, 1872.*

Kindergarten

1840

Friedrich W. A. Froebel (1782–1852)

Child-centered educational ideals date from the eighteenth-century writings of the French philosopher Jean-Jacques Rousseau. They embody the idea that there exists in children an innate impulse or dynamic principle that will lead them to education. The role of educators in this approach is most like that of gardeners, tending children in such a way that growth occurs naturally. An explicit expression of this was the *kindergarten,* or "children's garden," a term coined by German educator Friedrich Froebel.

Froebel grew up a lonely child. His mother died when he was an infant, and his father, a Lutheran minister, was busy with his work. Early in life he developed an intense love of nature, perhaps because he lived in one of the loveliest parts of Germany. He believed nature ultimately expressed the unity and interconnectedness of all things.

As a young man, Froebel decided to devote his life to childhood education. Influenced by the Swiss educator Johann Pestalozzi, Froebel sought to create conditions where children could play, sing, explore, and learn through activities.

In 1837, Froebel and two friends opened the Play and Activity Institute in the German state of Thuringia. He began calling it a kindergarten in 1840. To encourage the children, Froebel created a set of toys, or "gifts," that symbolized his philosophy. One was a ball, to indicate the unity of nature and the perfectibility of mankind. Patterned and geometric blocks were part of the set, too, meant to teach the child about the relation of the parts to the whole. Through these activities and materials, Froebel intended the school to be a place where the child's nature could develop and learning would be natural.

Curiously, the kindergarten had less success in Germany than in other parts of the world. But by the end of the nineteenth century, kindergartens were thriving in many other countries around the world.

SEE ALSO Rousseau's Natural Child (1762), Casa dei Bambini (1907)

Three Girls Reading, *oil on canvas, by German painter Walter Firle (1859–1929).*

Can Machines Think?

1843

Charles Babbage (1791–1871), **Ada, Countess of Lovelace** (1815–1852)

In 1747 the French physician and provocateur Julien Offray de La Mettrie published his book **L'homme machine** ("Man, a Machine") and created an outrage. But almost a century later, the British polymath Charles Babbage designed a machine that could "think." He called his machine the Analytical Engine. In doing so, Babbage prefigured work on cognition, computers, and artificial intelligence in the mid-twentieth century.

Babbage designed the device in the hope that machines could improve on human calculation. His first machine, the Difference Engine, was intended to calculate and print arithmetical tables automatically by using the principle of finite differences.

Later Babbage designed a complex machine that could perform general computation, and it is this that makes him a pioneer of modern computing. The Analytical Engine was designed to use punched cards to control a mechanical calculator that could, in turn, use the input of prior computations. Babbage continued to tinker with his design until his death.

Ada Lovelace (as she is commonly known) was the daughter of the poet Lord Byron. A skilled mathematician, she struck up a friendship with Babbage. Her most important contribution to modern computing was her notes on a lecture given by an Italian engineer, Luigi Menabrea, concerning the Analytical Engine. In her notes, published in 1843, she explored the potential of the machine to operate not just on numbers but on any material that could be represented in an abstract form, such as musical pitch. She then surmised that it might be possible for the machine to compose, for example, elaborate pieces of music. She cautioned, however, against the possibility that machines were capable of true creativity; she claimed they can only accomplish what they are programmed to do. This became known as the "Lovelace objection."

Certainly, the Analytical Engine had some of the characteristics of the modern computer, such as programmability, a memory store, and a central processor. While never completed, Babbage's machine foreshadowed the modern computer and served as an inspiration for later scientists. Aspects of Babbage's work also anticipated modern cognitve science and artificial intelligence studies.

SEE ALSO Turing Machine (1937), Cybernetics (1943), Logic Theorist (1956)

A painted portrait of Ada, Countess of Lovelace, by Margaret Sarah Carpenter. Oil on canvas, 1836.

The Curious Case of Phineas Gage

1848

Phineas Gage (1823–1860)

In the days when America's network of railroads was growing quickly, an accidental explosion gave new insight into the link between an individual's brain and his or her personality. In 1848, Phineas Gage, a construction foreman on the Rutland and Burlington Railroad, was laying new track near Cavendish, Vermont. When he dropped the tamping iron for the dynamite by accident, it struck a spark and set off some nearby blasting powder. The explosion drove the tamping iron—some three feet, seven inches long—back through his skull, and it landed nearly one hundred feet away. The rod had passed through the front part of his brain and destroyed large parts of the frontal cortex, which is associated with behavior, motor skills, and problem solving. Gage also lost vision in his left eye.

Despite the severity of the injury, Gage survived. Remarkably, he did not lose consciousness immediately and was able to walk up the stairs to his hotel room. After his injury was cleaned, he said that he expected to return to work within a few days. His condition temporarily deteriorated, however, so he remained in bed. After recuperating at home in New Hampshire, he tried but was unable to return to his old job; instead, he worked in a stable before moving to Chile, where he stayed for eight years. Gage developed epilepsy, and, nearing death, he returned to the United States.

The reason that Gage was unable to go back to his former job was that his personality had changed. In his position as foreman, Gage had been stable, reliable, and steady in his temperament. After his recovery, he was impulsive, childish, and given to displays of anger; it was also obvious that his intelligence had been compromised. Gage's terrible accident was the first clear indication of the close link between the frontal cortex and personality.

SEE ALSO Localization of Brain Function (1861), Split-Brain Studies (1962)

Cabinet-card portrait of brain-injury survivor Phineas Gage (1823–1860), shown holding the tamping iron that injured him.

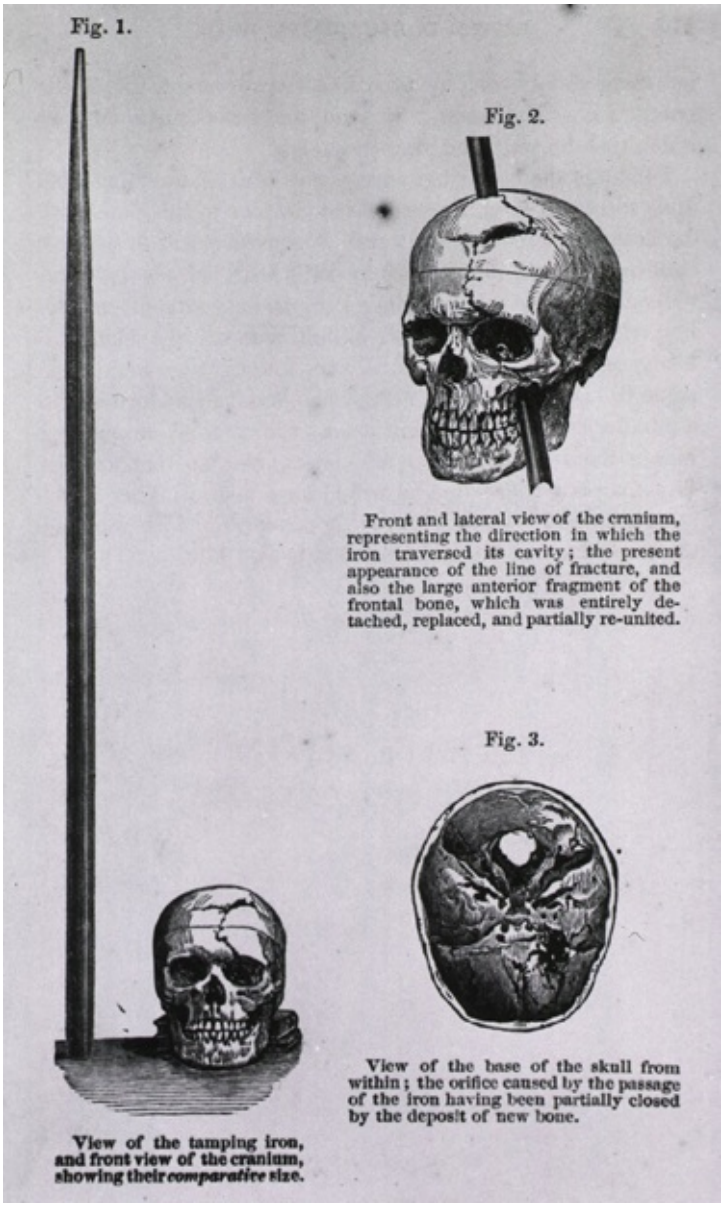


Fig. 1.
Fig. 2.
Front and lateral view of the cranium, representing the direction in which the iron traversed its cavity; the present appearance of the line of fracture, and also the large anterior fragment of the frontal bone, which was entirely detached, replaced, and partially re-united.
Fig. 3.
View of the base of the skull from within; the orifice caused by the passage of the iron having been partially closed by the deposit of new bone.
View of the tamping iron, and front view of the cranium, showing their comparative size.

"Recovery from the passage of an iron bar through the head," volume 2, p. 346, from a publication of the Massachusetts Medical Society, 1868.

Circular Insanity

1851

Jean-Pierre Falret (1794–1870), **Emil Kraepelin** (1856–1926)

The observation that mood states may swing back and forth rather freely for some people has been made for centuries; the scholar Robert Burton described it in ***The Anatomy of Melancholy*** (1621). Jean-Pierre Falret, a French physician at Hôpital de la Salpêtrière, used the term *la folie circulaire* ("circular insanity") to describe this vacillation in his patients, and in 1893, Emil Kraepelin, psychiatrist and founder of the modern classification schemes of mental disorders, rechristened "circular insanity" manic-depressive psychosis. The fifth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders,* or the DSM-5, labels these symptoms as bipolar disorder.

As these various labels indicate, the diagnosis includes the symptoms of depression and mania. In fact, the person may primarily exhibit depression, but if there has been one episode of mania, then the diagnosis is bipolar disorder. It is thought that a person suffering from manic depression will have recurring episodes once it begins.

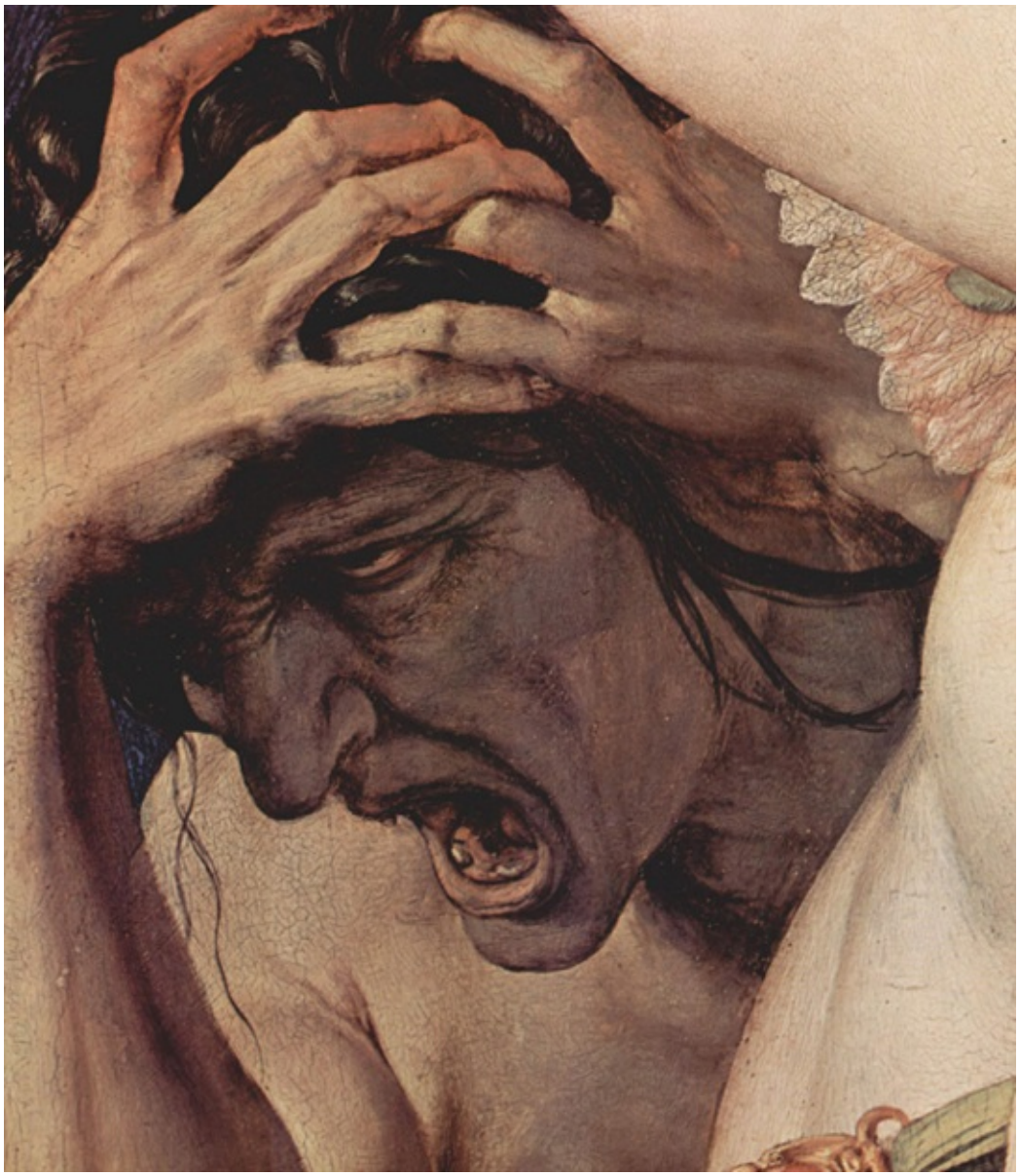
While the depression side of the disorder is not hard to understand, what does *mania* refer to? The symptoms of mania are typically extreme, usually representing a break with reality, or psychosis. The mood may be elevated, even euphoric, and to achieve a definitive diagnosis the episode must last for at least a week. In some cases, the person is easily irritated and may become violent. Among the symptoms are extreme goal-directed activity and such rapidity of thought that it can be described as a flight of ideas; often there is a dramatically reduced need for sleep. In some cases, the person may experience delusions of grandeur.

Historically, there has been an association of creativity with manic depression. Prominent musicians, painters, poets, architects, and writers have been among those who have experienced the disorder. Many of them reported that their greatest and most intense moments of creativity occurred while they were in a manic state. The poet Lord Byron, the writer Virginia Woolf, the singer

Rosemary Clooney, and many other artists are known to have suffered from the disorder.

SEE ALSO The Schizophrenias (1908), Antipsychotic Medications (1952)

A photograph of French poet Charles Baudelaire, who is thought to have suffered from manic-depressive illness, c. 1863.



This detail from Italian painter Bronzino's Venus, Cupid, Folly and Time *(1546) shows an anguished old woman, thought to represent Jealousy, clutching at her hair.*

Mind-Cure

1859

Phineas P. Quimby (1802–1866)

A new self-help movement began in the late 1800s that brought together a variety of practices and beliefs about how to be healthy. It was called New Thought, or Mind-Cure.

The movement's founding father was Phineas P. Quimby, a clockmaker turned mesmerist turned healer. In 1859, Quimby settled in Portland, Maine, where he wrote and taught about the important connections among mind, behavior, and health. In Quimby's system of psychological healing, an intense rapport was developed with the patient, allowing the healer to see the false belief (about disease) that was the true cause of the illness. Treatment consisted of correcting the false belief, and health could be maintained through right thinking. This was one of the first psychological therapies.

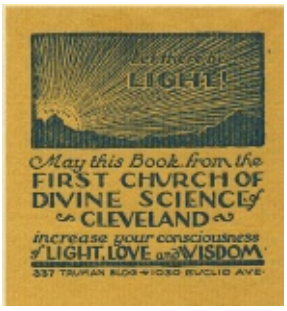
Quimby's system was influential and appealed to people across the social and educational spectrum. Mary Baker Eddy, a former patient of Quimby's, founded Christian Science in 1866, and by the early 1900s there was a growing number of women and men who developed Mind-Cure approaches influenced by Quimby. Many of these practitioners were loosely organized under the name of New Thought, and their appeal was wide. Some New Thought volumes sold hundreds of thousands or even millions of copies.

The American psychologist William James called this movement the "religion of healthy-mindedness." Clearly, millions of Americans believed in the importance of the mind-body connection in health and disease. For many, such belief was combined with special diets—vegetarianism, fruitarianism, herbalism—and exercise in order to maximize health and mental functioning. The healthy person was one who was fit in body, mind, and spirit.

Over the course of the twentieth century, this willingness to believe in the importance of the mind-body connection was manifested in new scientific approaches, including **Psychosomatic Medicine**, health psychology, and psychoneuroendocrinology, along with continuing interest in herbs, diet, and

exercise.

SEE ALSO *The Principles of Psychology* (1890), Psychosomatic Medicine (1939), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)



A bookplate from the First Church of Divine Science in Cleveland, Ohio, dated to the early twentieth century.

Mary Baker Eddy Memorial in Mount Auburn Cemetery, Cambridge, Massachusetts. Eddy was one of the disciples of Phineas P. Quimby and extrapolated the principles she learned from him into the first tenets of Christian Science.

On the Origin of Species

1859

Charles Darwin (1809–1882)

In September of 1831, Charles Darwin was interviewed by Captain Robert FitzRoy of the HMS *Beagle* for the position of gentleman companion on a two-year voyage for the purpose of mapping the coast of South America. But instead of two years, the *Beagle* sailed for more than twice that long on what became a trip around the world. Darwin, as the naturalist on board, busied himself collecting specimens and making careful observations throughout the trip. He filled a large scientific diary with thousands of geological and zoological data.

The *Beagle* docked at Falmouth, England, on October 2, 1836, nearly five years after it left Plymouth Sound. Darwin spent the next several years carefully considering his data and pondering questions about whether and how species change. Drawing on a range of sources, he eventually settled on a theory of gradual evolutionary change by natural selection. He shared his theory only with a few close friends—until 1858, when he became aware of a very similar theory that had been developed by the British naturalist Alfred Russel Wallace. Fearing that he would not be credited for his years of painstakingly developing his theory, Darwin published his ideas in *On the Origin of Species* in 1859.

Although almost all of his examples were drawn from observation of animals, Darwin included humans and mental life in his theorizing from the beginning. Darwin made four important contributions to the development of psychology. First, he presented evidence that human beings are part of nature; thus we, like all other forms of life, are subject to the laws of nature. Second, Darwin's approach made the function of a trait or ability an important aspect of its definition—that is, what does a particular trait or ability do for us? How does it aid survival? Third, Darwin's theory suggested that human abilities could be compared fruitfully with those of other animals (what we call comparative psychology), and that this comparison aids our understanding of the development of human beings—a field that later came to be called developmental psychology. Finally, his emphasis on the role of natural selection

in human variability laid the foundation for a psychology of individual differences, which, in the United States, has had its greatest success as an instrument of social management.

SEE ALSO *The Principles of Psychology* (1890), Functional Psychology (1896), Universal Expression of Emotions (1971)

A watercolor portrait of Charles Darwin from the late 1830s.

The ladder of evolution, as depicted in the British Natural History Museum.

Localization of Brain Function

1861

Paul Broca (1824–1880)

Ferocious debates about the nature of the soul, mind, and brain raged throughout the nineteenth century. Were mental functions entirely due to brain activity, or were there certain functions, like reason, that were reserved for divine influence, as French philosopher René Descartes had argued two centuries earlier? In the nineteenth century, a new generation of scientists turned to the clinical case study and the laboratory experiment to find evidence to support their arguments. One of the most controversial topics was whether mental functions were localized, or restricted to certain areas, in the brain. Franz Gall had developed phrenology, or the study of the surface of the skull, and stated unequivocally that the mind's abilities were entirely attributable to the brain and certain traits were found in specific brain areas. Many sought to discredit Gall's approach, calling it godless, but by the mid-nineteenth century, evidence was mounting that at least some mental functions were indeed localized in the brain.

Language was one such function, and in 1861 the young French surgeon Paul Broca provided the first concrete evidence with his careful case study of a Monsieur Leborgne, known by the nickname of Tan. Tan, who had lost the ability to speak years earlier, came under Broca's care a few days before he died. Broca realized that this case presented an opportunity to test his theory that the ability to speak was localized in the frontal lobe of the brain; upon autopsy, damage was found in the rear portion of the left frontal lobe. Other cases of language loss and localized brain damage soon were found, and although these findings did not settle the debate conclusively, they provided crucial evidence of localization of functions. The lack of ability to speak is now known as Broca's aphasia.

After Broca, many other scientists provided evidence of localized function. By the end of the nineteenth century, the study of the brain was firmly in the domain of science, with little need to rely on philosophy or religion.

SEE ALSO The Curious Case of Phineas Gage (1848), Split-Brain Studies (1962)

This illustration highlights the brain's parietal lobe, which is believed to play a role in navigation, language processing, and sensation.

Down Syndrome

1866

John Langdon Down (1828–1896)

One of the most common causes of intellectual disability is the presence of three copies of chromosome 21 instead of the usual two. In much of the world, the resulting condition is known as trisomy 21. How it came to be called Down syndrome, or Down's syndrome, is an interesting story.

In an era when the term *idiocy* was broadly used to describe people with a range of mental impairments, the British physician John Down sought a useful classification in order to provide better care. Down had grown up the son of an apothecary, or druggist, and seemed destined for that role himself, but his high marks allowed him to enter medical school. Apparently on his way to a brilliant career in London, Down chose instead to become the superintendent of Royal Earlswood Asylum for Idiots in 1858, which then was a place where little differentiation was made of the patients' abilities. In 1866, Down published a new classification of "idiocy" based on a theory that it could be related to ethnicity. Because many of the intellectually disabled patients had, at least to the nineteenth-century English, facial characteristics suggestive of the Asian Mongoloid race, Down referred to the condition as mongolism, and for nearly a century, the term *mongoloid* was widely used in the English-speaking world. When a group of physicians wrote to the important medical journal *The Lancet* in 1961 to demand that *mongolism* be abandoned as a medical term, the current term, *Down syndrome*, was adopted.

Down's efforts at Earlswood reflected a change in treatment philosophy regarding retardation. The French physicians Jean-Étienne-Dominique Esquirol (1838) and Édouard Seguin (1844) had begun to advocate for the educability of many suffering from mental impairment. At the least, they argued, such patients should be removed from prisons or poor houses. In the United States, the reformer Dorothea Dix sought to have special education provided for those who were "feebleminded."

The work of Down, Seguin, Dix, and others show us that the lives of those

with disabilities still can be improved.

SEE ALSO Moral Treatment (1788), Victor, the Wild Boy of Aveyron (1801)

A c. 1854 engraving by Edmund Evans (1826–1905) of the Royal Earlswood Asylum for "Idiots" in Surrey, England, which catered to people with learning disabilities. John Langdon Down was appointed Medical Superintendent there in 1858.

Prosopagnosia

1867

Antonio Quaglino (1817–1894), **Giambattista Borelli** (1813–1891)

The French neurologist Jean-Martin Charcot once had a patient who tried to shake hands with a man who had bumped into him; the other man was himself, reflected in a mirror. This inability to recognize faces, or prosopagnosia, is a relatively rare disorder. It is one of several kinds of visual agnosias, or inability to recognize familiar objects, that is not associated with general intellectual impairment. Nor is it a problem of vision; people suffering from prosopagnosia typically have perfectly good vision. It is a disorder resulting from damage to the brain, usually in both the temporal and parietal lobes. Recently, however, individuals with developmental prosopagnosia, which is present from birth, have been found, indicating a possible genetic basis for face recognition.

Historically the condition was first described, though not named, in the medical literature in 1847. The first full account of a patient, however, came from two Italian ophthalmologists, Antonio Quaglino and Giambattista Borelli, in 1867. They offered a detailed case study of a man who had lost the ability to recognize faces and the exteriors of houses after having a stroke in the right hemisphere of his brain. The term *prosopagnosia* (“face not knowing”) was given to the disorder in 1947. More recently, neurologist and author Oliver Sacks gives a fascinating account of prosopagnosia in his book *The Man Who Mistook His Wife for a Hat* (1985).

Curiously, it is not only human faces that are affected by the disorder. There are accounts of farmers who fail to recognize their cows or sheep and bird-watchers who lose the ability to distinguish between species of birds.

Contemporary research using brain imaging techniques such as functional magnetic resonance imaging (fMRI) suggest that face recognition is a special function. Research with primates, including humans, indicates that there are specialized neurons (or brain cells) dedicated to recognizing faces. Apparently, damage to these cells leads to the inability to recognize faces, even our own.

SEE ALSO Brain Imaging (1924), Mirror Neurons (1992)

Nude Before the Mirror *by German artist Karl Piepho (1869–1920), oil on canvas.*

Sensory Physiology

1867

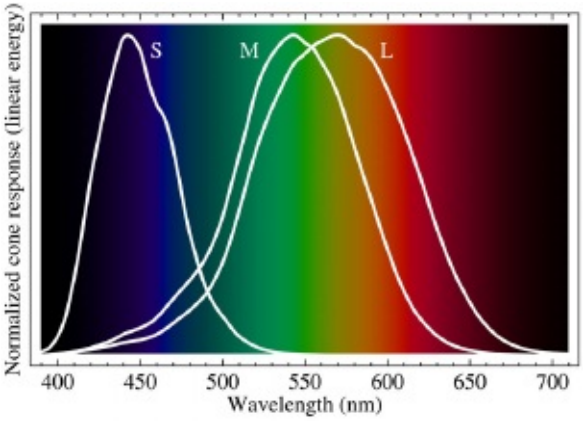
Hermann von Helmholtz (1821–1894)

Hermann von Helmholtz was perhaps the greatest scientist of the nineteenth century. He made contributions that changed the fields of physics, physiology, optics, and audition. In psychology, one of his most important contributions was the ability to measure a nerve impulse's speed. This indicated the possibility of measuring mental activity using what was soon called the reaction-time method. Helmholtz also showed that the law of conservation of energy applied to living organisms, including humans, as well as to the inorganic world; that is, the energy and heat expended by an organism are equal to the calories available in the food it consumes. This suggested that machines, including the human machine, are devices for transforming energy from one form into another.

A landmark publication for both physiology and psychology was *Helmholtz's Handbook of Physiological Optics* (1867), in which he made a crucial distinction between sensation and perception based on his experimental work in optics. He argued that sensations are merely the raw data that come through our senses, and these data are made meaningful by perception. In this account, perception is a psychological process that depends on the brain, prior learning, and context.

Helmholtz also proposed a trichromatic theory of color vision. Like the English scientist Edward Young, who preceded him, Helmholtz suggested that color vision results from the stimulation of specific receptors in the retina, which are now known as cone cells. It is a trichromatic theory because there are three primary receptor types—one each for red, green, and blue-violet. Other colors result from stimulation of more than one receptor; if all three receptor types are stimulated, we see white. Helmholtz's theory placed the emphasis on what happens within the human brain and nervous system rather than on the physical properties of light waves. His research provided a critical link between physiology and psychology and was crucial for creating the possibility of a scientific psychology that sought to understand psychological functions as operating according to laws of nature.

SEE ALSO Experimental Psychology (1874), Mental Chronometry (1879)



Normalized response spectra of the three varieties of human cone cells to monochromatic spectral stimuli, with wavelength given in nanometers.

Statue of Hermann von Helmholtz, Humboldt University, Berlin.

Synesthesia

1871

Gustav Theodor Fechner (1801–1887)

Synesthesia is a condition in which the senses flow into each other, like a house without interior walls. It occurs when a person has an experience in one sense that is accompanied by an involuntary experience in one of the other senses. Reported synesthetic experiences involve sound-color, smell-color, and movement-sound. Some synesthetes, or people affected with synesthesia, experience a day of the week as a person or as a color; the possibilities are numerous. One classic case reported by neuroscientist Richard Cytowic involved a friend who experienced flavor as shape and commented about a meal, “There aren’t enough points on the chicken! It is too round.” The most commonly reported synesthesia is number-color (or letter-color)—for example, the number seven is experienced as red.

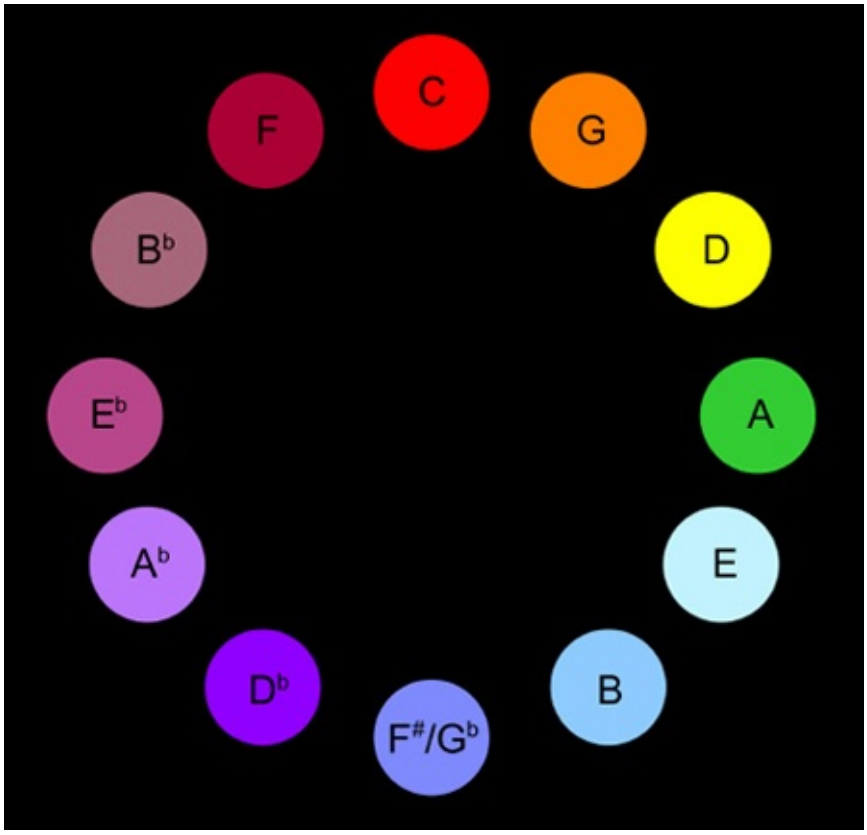
The earliest research on synesthesia was conducted by the German philosopher Gustav Fechner. His study, published in 1871, included seventy-three synesthetes who all experienced letters as colors. In 1880, the scientist Francis Galton reported that it appears to run in families, a supposition strongly supported by recent research, including studies by Ramachandran and Hubbard (2001) and Grossenbacher and Lovelace (2001). Interest in synesthesia was strong among early psychologists, such as Alfred Binet and Théodore Flournoy, then waned for a number of years, but it has shown resurgence since the 1980s.

Synesthesia is relatively rare: estimates of its occurrence range from one in two thousand to one in two hundred people, and it is found more frequently among artists, poets, musicians, and novelists. As neuroscientist V. S. Ramachandran noted about this connection, “One thing these groups of people have in common is a remarkable facility for linking two seemingly unrelated realms in order to highlight a hidden deep similarity.”

One hypothesis about the cause of synesthesia is that it is due to crosswiring in the brain. For example, the most common synesthesia, number-color, may reflect such crosswiring between two adjacent areas—one that processes number

shapes and one that deals with colors. Many prominent neuroscientists believe that further research on synesthesia will greatly expand our understanding of brain functions and human consciousness.

SEE ALSO Psychical Discharges (1941), Neuroplasticity (1948)



An illustration of Russian composer Alexander Scriabin's key–color association.

Phantom Limb Pain

1872

Silas Weir Mitchell (1829–1914)

Many people have reported the experience of still feeling a limb, eye, or appendix that has been removed, and most describe accompanying pain in the phantom part. Often the patient will relate a vivid sensation of the missing limb fixed in a particular posture, such as a clenched fist or arm bent at the elbow, while others report that the phantom is shorter than the remaining part.

In 1872, American neurologist Silas Weir Mitchell became the first person to offer a clear clinical description of this phenomenon. Until much more recently, however, its causes remained unclear. But in the last thirty years scientists have begun to lift the veil of mystery about phantom limbs and gain new insights into brain organization and **Neuroplasticity**. Current research has shown that the brain's somatosensory cortex, where sensations relating to touch are sent after stimulation, is plastic, meaning that it can be reorganized to account for new experience. For example, when the nerve connection of a monkey's finger was severed so that it no longer provided input to the brain, researchers found not only that the somatosensory location for that finger was no longer responsive but also that it had become responsive to the adjacent finger. (In the somatosensory cortex, the largest number of neurons are devoted to sensitive areas such as the face, the lips, and the hands.) The implications of this discovery for rehabilitation are profound and exciting. Neuroscientist V. S. Ramachandran developed a simple but effective treatment for phantom limb pain—the mirror box—which tricks the brain into seeing the extant limb as the phantom limb. With movement of the extant limb, the patient is able to undo the "learned paralysis" of the phantom limb. With repeated use of the mirror box, the relevant portions of the brain are reorganized in terms of experiencing sensation. Research with this technique shows that a high percentage of patients with phantom limb discomfort experience profound pain relief.

SEE ALSO Neuroplasticity (1948)

World War I amputees at Walter Reed Hospital, 1918.

Nature versus Nurture

1874

Francis Galton (1822–1911)

In *Hereditary Genius* (1869), scientist Sir Francis Galton, a cousin of Charles Darwin, proposed that prominence and genius were largely due to heredity. Galton did not so much discount the influence of the environment as ignore it. French Swiss botanist Adolphe de Candolle disputed Galton's claim and provided statistical evidence of the importance of environmental influences on the development of scientists in his 1873 book, *Histoire des sciences et des savants depuis deux siècles.* Galton countered Candolle with his 1874 book, *English Men of Science: Their Nature and Nurture.* Galton argued that "nature is all that a man brings with himself into the world, nurture is every influence that affects him after his birth." The phrase was soon turned into *nature versus nurture,* and the ensuing debate has not been settled yet.

The later development and use of standardized intelligence tests led to fierce arguments about the role of heredity and environment in human intelligence. Studies in the 1920s and 1930s provided evidence that differences between minority and white children in academic achievement were due to cultural, environmental, and linguistic factors rather than innate differences in ethnic intellect. In a series of studies, psychologists found that placing orphaned white children in an atmosphere where they were showered with attention and affection raised their test scores. And perhaps most telling, twin studies demonstrated how raising genetically identical children in different environments can lead to significant differences in both personality and physique.

Still, aided by advances in neuroscience and the study of heredity, many psychologists hold to the overriding importance of nature in numerous domains, from personality to mental disorders to intelligence. It is likely that the debate will never be decided in favor of one view or the other.

SEE ALSO Psychological Tests (1890), Army Intelligence Tests and Racism (1921), The Flynn Effect

(1984)

Each technological innovation gives scientists and psychologists a chance to reexamine the influence of "nurture" on a child's development.

Experimental Psychology

1874

Wilhelm Wundt (1832–1920)

Hailed as the founder of experimental psychology, Wilhelm Wundt left a multifaceted legacy for modern students of the discipline. His founder status rests in part on a number of important intellectual and institutional firsts. In 1874 he published the first textbook of experimental psychology, *Principles of Physiological Psychology*. Five years later, at Germany's University of Leipzig, he established the first psychological laboratory and trained dozens of new psychologists who flocked to study there and solidify their scientific credentials.

In developing psychology as an experimental discipline, Wundt built on the work of Gustav Fechner, Hermann von Helmholtz, and other psychophysical and physiological researchers by applying systematic, replicable methods to the study of conscious experience. Wundt did this by using often quite elaborate mechanical apparatuses to make standardized presentations of stimuli to subjects who were trained to observe and report their conscious experience of these stimuli. Known as experimental introspection, it was a method that Wundt felt was appropriate for studying the basic properties of the normal adult human mind, such as sensation, perception, and attention.

But here is where Wundt's legacy gets more complex. Wundt felt that higher-order functions, such as thinking, language, personality, social behavior, and customs, could not be studied with these experimental methods but were nonetheless an important, if not central, part of scientific psychology. For this branch of his system he specified comparative and historical methods involving naturalistic observation and logical analysis. He felt so strongly about this part of psychology that he wrote twelve volumes, entitled *Völkerpsychologie*, on the subject. In this work, he outlined how the study of the products of collective life, including religion, language, and social mores, could provide clues to the higher operations of the mind. This aspect of Wundt's work was largely neglected until historians brought it to light in the 1970s. Thus Wundt not only founded experimental psychology but also defined the limits of its methods.

SEE ALSO Just-Noticeable Difference (1834), Sensory Physiology (1867), Mental Chronometry (1879)

Wilhelm Wundt and colleagues in the world's first experimental psychology laboratory at Leipzig University.

Baby Biographies

1877

Charles Darwin (1809–1882), **Wilhelm Preyer** (1841–1897), **L. William Stern** (1871–1938)

The development of infants into fully functioning adults has long fascinated scientists. The field of developmental psychology may have begun with the early "baby biographies" that began appearing in the nineteenth century. Among the most important were those written by naturalist Charles Darwin, physiologist and psychologist Wilhelm Preyer, and psychologist L. William Stern.

William "Doddy" Darwin was born in 1839 to his very proud parents, Charles and Emma Darwin. It was not long before Darwin was keeping a meticulous journal about the boy. In his first week, Doddy yawned and stretched, then frowned on the eighth day. His father maintained the diary for many months, noting his development of reflexes, movement, and emotional expression. He did not publish his account of Doddy's development, "A Biographical Sketch of an Infant," until 1877.

Not long after Darwin's sketch was published, Wilhelm Preyer published *The Mind of the Child* (1881), about the development of his son Axel, while William and Clara Stern published two biographical studies of their children. For both Preyer and the Sterns, their children were typical, thus making their case studies even more compelling as accurate accounts of how children develop.

In America, the first baby biography was authored by Millicent Shinn, editor of California's only literary magazine. The infant she studied was her niece Ruth, born in 1890. The notes she kept were of such great interest that she was invited to give a talk at the World's Columbian Exposition in Chicago in 1893. There she made the case that careful child study was absolutely necessary in order to provide the best education possible. Her study led to graduate work, and in 1898 she became the first woman to receive a doctoral degree from the University of California.

These nineteenth-century accounts held both popular and scientific appeal.

For the newly emerging science of psychology, they provided a set of systematic observations that allowed twentieth-century developmental psychologists to build on their work with more carefully controlled studies.

SEE ALSO Psychosexual Development (1905), Attachment Theory (1969), The Strange Situation (1969), Ecological Systems Theory (1979)

William Preyer.

Almost every family loves to track a child's developmental milestones, but as demonstrated by Darwin, Preyer, and the Sterns, careful accounts allow us to learn a great deal about child development in general.

Mental Chronometry

1879

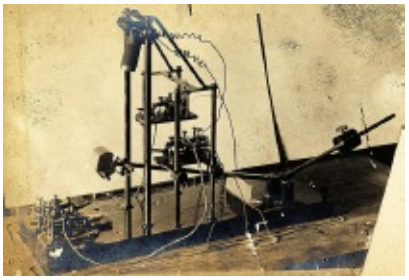
Wilhelm Wundt (1832–1920)

In the new field of **Experimental Psychology**, precision measurements of mental processes were extremely important. The pursuit of precision resulted in research programs typically referred to as reaction-time experiments or mental chronometry. Contributing to this was the puzzling phenomenon in astronomy that came to be called the personal equation, or the individually differing reports of observed astronomical phenomena. This led to an inquiry into the physiological and psychological differences among astronomers. In physiology, Hermann von Helmholtz showed that it was possible to measure the speed of the nervous impulse in humans (1850). This was important for psychology, as it indicated that it might be possible to measure the speed of mental acts.

The Hipp Chronoscope, developed by the clockmaker and inventor Matthias Hipp for use in military ballistics, was modified to measure the subjectively experienced difference between simultaneously presented stimuli in human reaction-time studies. Physiologist and psychologist Wilhelm Wundt used such experiments to make time a subject for scientific research. The reaction-time experiment allowed Wundt to extend his research beyond the domain of sensory physiology into a program that investigated elementary aspects of human psychological experience. As a result, he was able to obtain funds to open the first laboratory of psychological science in the world, at Germany's University of Leipzig in 1879. Thus Wundt is usually credited with being the founder of scientific psychology.

Wundt was soon joined by other investigators who also used an array of precise measurement technologies to study basic psychological phenomena. For example, at almost the same time as Wundt opened his laboratory, Italian psychologist Gabriele Buccola began using reaction-time experiments to understand the disordered mental processes of asylum patients. The perceived ability to understand "the speed of thought" gave the new field of psychology enhanced visibility in an ever more technological world.

SEE ALSO Just-Noticeable Difference (1834), Sensory Physiology (1867), Experimental Psychology (1874)



Wundt's control hammer, used to calibrate the Hipp Chronoscope, 1895.

Hermann von Helmholtz as a young man.

Anna O.

1880

Josef Breuer (1842–1925), **Sigmund Freud** (1856–1939)

The idea that human beings convert their psychological distress into physical symptoms is the basis of what is now called somatoform disorder. It has a long and rich history linked to the beginning of **Psychoanalysis**. Patients suffering from **Hysteria** in the nineteenth century often displayed unusual physical symptoms, many of which were found to be neurologically impossible—for example, in the condition known as glove anesthesia, the patient reports no sensation below the wrist but upon examination the doctor can find no neurological cause. Physician Josef Breuer discussed the case of "Anna O." with neurologist Sigmund Freud early in their professional relationship. In 1880, Breuer had treated the young woman, whose real name was Bertha Pappenheim, for a variety of symptoms that emerged as she cared for her dying father.

Freud and Breuer's work on the case of Anna O. is part of the origin of the notion of "conversion." According to Freud, the inclination toward conversion was characteristic of hysterical patients. The conversion occurs when a mental image, impulse, or desire is incompatible with the part of our psychic apparatus that Freud termed the ego. In order to deal with the stress, the emotion associated with the unacceptable image is dismissed from consciousness by means of repression. The energy, however, remains and is converted into a sensory-motor disturbance that symbolizes and physically expresses the unacceptable content. This solves, at least temporarily, the original psychological conflict.

The transformation does not happen by chance. Freud suggested that the chosen bodily function is always one that has been invested with special significance in some special moment of life. In this sense, the body part or function held a particular symbolic meaning.

For many years, conversion disorder was a common diagnosis. As the field of **Psychosomatic Medicine** developed in the 1930s, it played an important theoretical role, exemplified in the belief that **Stress** and worry could cause a peptic ulcer, for example. Curiously, the number of diagnosed cases of

conversion disorder greatly diminished in the last third of the twentieth century.

SEE ALSO Hysteria (1886), Psychoanalysis (1899), Psychosomatic Medicine (1939), Stress (1950)

Bertha Pappenheim in 1882, age 22.

Tourette Syndrome

1885

Georges Gilles de la Tourette (1857–1904)

In 1884, Georges Gilles de la Tourette, a young medical resident at Hôpital de la Salpêtrière in Paris, was given the task of investigating involuntary movement disorders by the chief neurologist, Jean-Martin Charcot. There were a few extant case reports of such movements, such as the “jumping Frenchmen” of Maine, a group of lumberjacks who mysteriously developed an exaggerated startle reflex during the 1870s.

Tourette’s 1885 report included nine case studies, including the well-known case of the Marquise de Dampierre, a noblewoman who displayed odd involuntary movements, such as grimacing and tics, along with sudden curses and screams. The typical age of onset was between six and sixteen, with tics that began in the face and arms, and it was more common in males. Along with these sudden movements, Tourette reported two other common symptoms: involuntary repetition of words or phrases when in conversation (or echolalia) and involuntary repetition of the movements of others (or echopraxia). Last to appear, according to Tourette, was coprolalia, or spontaneous cursing. While this symptom is the one best known by the public because of its depiction in Hollywood movies, even in Tourette’s day it was not a requisite symptom.

For many years, Tourette syndrome was thought to be relatively rare. Even as recently as 1973, it was thought that there were fewer than five hundred cases worldwide. Better epidemiological research since then shows that about six to eight children per thousand have the disorder. Various causes have been advanced since Tourette’s era, including **Hysteria**, hereditary degeneration, and bad mothering. Today the general consensus is that both genetic and environmental factors are important in the onset of Tourette’s, though no specific genetic pathway has been identified. Effective treatments include both drug therapy and various psychobehavioral therapies, often in combination. There is no cure.

SEE ALSO Antianxiety Medications (1950), Cognitive Therapy (1955)

Georges Gilles de la Tourette, c. 1870.

Pilgrimage of the Epileptics to the Church of Molenbeek, *an engraving by Henrik Hondius the Elder, 1642, based on a drawing by*

Flemish artist Peter Brueghel the Elder (c. 1526–1569).

Multiple Personality Disorder

1885

Pierre Janet (1859–1947)

While collecting material for his doctoral dissertation in 1885, the young philosophy student and teacher Pierre Janet first described the case of Léonie, a woman with the unusual ability to be hypnotized from a distance. In addition, when she was under hypnosis, it became evident that Léonie had three distinct selves. Further experiments with her and other subjects—all of whom had more than one personality—were detailed in Janet's book *Psychological Automatism* (1889). The book caused a sensation in the medical and psychological worlds. Janet coined the term *dissociation* to indicate the condition of experiencing a split in a person's sense of self. When Janet's work received wider recognition, others began reporting cases of split or multiple personalities as well.

In 1957, the movie *The Three Faces of Eve* fictionalized the case of an American woman with three personalities: Eve White, Eve Black, and Jane, each of them with seemingly independent lives. The movie brought the concept of multiple personalities back into popular culture, but in the 1980s and 1990s the disorder, now renamed dissociative identity disorder, or DID, seemed to be everywhere, with several well-known individuals revealing that they had multiple personalities.

The diagnostic criteria for DID includes at least two more or less complete systems of identity, with the person switching from one to the other, usually for short periods of time. The host personality is usually the best defined, while the alter identities may vary wildly from the host. The number of alter identities varies, ranging from two to as many as fifteen. Currently, alter identities are not conceptualized as completely separate personalities; rather they are displays of conflicts, feelings, and memories, acted out in a very stylized manner. Still, just as with Léonie, these cases fascinate us with their demonstrations of the complexity of personhood.

SEE ALSO Psychoanalysis (1890), Projective Tests (1921)

A poster advertising an 1880s production of The Strange Case of Dr. Jekyll and Mr. Hyde*—a vivid portrayal of the split personality.*

Hysteria

1886

Jean-Martin Charcot (1825–1893), **Sigmund Freud** (1856–1939)

The earliest descriptions of what can be recognized as hysteria date back to ancient Egyptian papyri (c. 1900 BCE). The Hippocratic treatises from the fifth century BCE include passages on disorders of the *hystera* (Greek for “uterus”). Symptoms related to the *hystera* included a sense of suffocation caused by an ascending uterus. The most common patients were widows deprived of sexual intercourse.

Medical writers across the centuries and across cultures described similar symptoms and added others. By the mid-to late nineteenth century, hysteria was reconceptualized as a nervous disease. It became the so-called grand neurosis, and hundreds of theories and investigations into its causes and treatment filled literature across Europe.

In 1862, neurologist Jean-Martin Charcot became the director of Hôpital de la Salpêtrière in Paris. Initially Charcot believed that hysteria was caused by a hereditary predisposition to nervous illness. He offered rich, complex descriptions of hysteria and saw its presence in even the most innocuous expressions of daily life. In his weekly grand rounds, the public was invited to observe him invoke and resolve hysterical fits at will in patients. Physicians and researchers from across Europe, including Sigmund Freud, came to learn from him.

It was the failure of the typical therapies of the time that led to Freud’s theory and practice of **Psychoanalysis**. After studying with Charcot in the winter of 1885–1886, he returned to Vienna, where his clinical case work led him to reject heredity and organic causes of hysteria. Instead, he developed a model in which hysteria represented the conversion of psychological distress into physical expression—tics, convulsions, and fits. Psychoanalysis emphasized the psychological basis of symptom formation; consequently hysterical symptoms were symbolic of repressed psychological experiences. Psychoanalytic treatment sought to bring these forbidden or traumatic experiences to light and thus

deprive them of their power.

SEE ALSO Anna O. (1880), Psychoanalysis (1890), Shell Shock (1915), Psychosomatic Medicine (1939), Stress (1950)

A Clinical Lesson at the Salpêtrière, *by French painter André Brouillet, 1887, shows Charcot demonstrating hypnosis on Blanche Wittman, one of his hysterical patients.*

Experimental Hypnosis

1886

Joseph Delboeuf (1831–1896), **Clark Hull** (1884–1952), **Ernest Hilgard** (1904–2001), **Josephine Hilgard** (1906–1989)

Hypnotism as a subject of modern scientific study dates from the late nineteenth century and the investigations of Joseph Delboeuf, a psychologist and philosopher working in France. Skeptical of the claims being made by other practitioners, such as Jean-Martin Charcot, Delboeuf conducted studies, first published in 1886, that led him to develop a typology of hypnotic subjects. But it was the work of American psychologist Clark Hull, culminating in his 1933 book *Hypnosis and Suggestibility*, that laid the foundation for twentieth-century psychological research.

Hull, better known for his role in developing **Neobehaviorism**, claimed his research established that hypnosis is a phenomenon of normal consciousness that varies by individual. In doing so, Hull sought to counter assertions that the hypnotic state may make it possible for a person to perform extraordinary feats normally outside his or her powers. His research did confirm, however, that a hypnotized person may not experience pain (a phenomenon known as hypnotic anesthesia) and may not remember the hypnotic episode after it ends (post-hypnotic amnesia). Nearly a hundred years earlier, James Braid in England and James Esdaile in India had reported the effective use of hypnosis to achieve anesthesia during surgery.

The experimental study of hypnosis has thrived since 1933, especially among psychologists. Although researchers differ on particulars, many agree that the susceptibility of subjects is critical for the success of hypnotism. Prominent investigators Ernest and Josephine Hilgard, along with their colleagues, developed the first reliable tests of hypnotic susceptibility; Josephine Hilgard also developed effective hypnotic techniques to reduce pain in children during medical treatment. The Hilgards' research established that there are no significant gender differences in susceptibility, but that children between the

ages of eight and twelve are more receptive than younger or older children.

In addition to showing a strong link between hypnotic sensibility and the ability to immerse oneself in a novel, play, or other artistic experience, researchers have also established that the hypnotized state is not a form of dreaming or sleeping, though there are some similarities.

SEE ALSO Mesmerism (1766), Multiple Personality Disorder (1885), Hysteria (1886)

In this c. 1900 poster, a hypnotist directs a group of people to do silly activities.

Psychopathia Sexualis

1886

Richard von Krafft-Ebing (1840–1902)

The terms *sadism,* indicating the enjoyment of sexual violence, and *masochism,* or the enjoyment of having violence inflicted on oneself for pleasure, were popularized by German psychiatrist Richard von Krafft-Ebing. He was writing at a time when there was concern that the great achievements of German *Kultur* were being lost to degeneration, which he took to mean the inheritable consequences of immoral behavior. Nor was he alone, as many of his fellow psychiatrists and physicians were warning of the same evil. In this they were anticipating the eugenics of the early twentieth century.

Most worrisome, Krafft-Ebing believed, were the sexual pathologies that seemed to be occurring with increasing frequency. He set himself to the task of cataloging and classifying these pathologies, and he illustrated them with extremely vivid examples so that they would serve as a warning and deterrent to all who read them. It may well have been that they had the opposite effect; that is, they served to excite the male imagination about illicit sexual behavior.

In more than two hundred case studies, Krafft-Ebing explained the origins and course of sexual pathologies. He divided the abnormalities into broad categories, which included excessive desire, inadequate sexual desire, and misdirected sexual desire; it was in this latter grouping that he placed homosexuality and bisexuality. What was unique about his writing on homosexuality was the emphasis on its biological origins.

After the first edition of *Psychopathia Sexualis* was published in 1886, Krafft-Ebing began receiving letters from individuals who were not patients in an asylum; rather, they wrote because they learned from the book that they were not the only sadists or masochists. In this way, one could argue that Krafft-Ebing’s classification of sexual pathologies helped create modern sexual identities. His case histories made such behaviors appear to be part of the natural world rather than mere vices.

SEE ALSO The Kinsey Reports (1948–1953), *Human Sexual Response* (1966), *Sexual Fluidity* (2008)

Unusual sexual practices were common, though often hidden, when Krafft-Ebing coined sadism and masochism *in his book.*

The Principles of Psychology

1890

William James (1842–1910)

Artistic by temperament, William James bowed to his father's wishes and was educated as a physician. He never practiced, however, and after a period of existential struggle he accepted an appointment as a lecturer at Harvard. There he pioneered the new field of psychology in America and wrote what proved to be the most influential text of his era, *The Principles of Psychology*. It took him twelve years to write, and after it was published in 1890, he wrote a friend, "Psychology is a damnable subject."

In *Principles,* James described psychology as the science of mental life. He wrote that the point of scientific psychology was to help us understand that consciousness and our minds evolved to help us adapt and survive in the world. Thus what consciousness does is more important than what it is or what it contains.

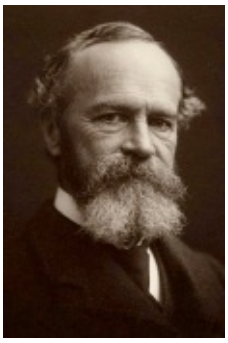
How might the mind best be studied? In Germany, the first laboratory psychologists were using refined mechanical instruments such as the Hipp chronoscope to measure mental reactions. James rejected this approach, as he believed that one could never understand the complexity of human mental life by adding up its contents or by measuring the speed of reactions. James offered an alternative view of consciousness. In a beautiful and enduring metaphor, he said consciousness is like a stream, dynamic and ever changing. A person, he wrote, could never step into the same river twice. Thus no instrument could ever capture this experience.

James also wrote about habit, calling it the "flywheel of life." He proposed a theory of emotions, that feelings follow behavior, which now is known as the James-Lange theory of emotions. (Carl Lange was a Danish physician who made the same suggestion independently but at about the same time.) James also argued for a pragmatic, pluralistic view of truth; those things are true, he argued, that help us in life.

James and his book have been the greatest influence on the development of

American psychology to date. To indicate his breadth, it is worth noting his obituary headline in the *New York Times*: “William James Dies; Great Psychologist, brother of novelist, and foremost American philosopher was 68 years old. Long Harvard professor, virtual founder of modern American psychology, and exponent of pragmatism, dabbled in spooks.”

SEE ALSO Mind-Cure (1859), Mental Chronometry (1879), Functional Psychology (1896)



William James, c. 1890s.

Tiber River at Rome, Italy, 2009. James used the phrase "stream of consciousness" as a metaphor for constantly changing mental processes.

Psychological Tests

1890

Alfred Binet (1857–1911), **James McKeen Cattell** (1860–1944), **William Stern** (1878–1931)

One of the first major practical applications of psychology was the development of psychological tests. In 1890, the American psychologist James McKeen Cattell coined the term *mental test*. Although Cattell's own program of testing college students at Columbia University failed, American psychologists made testing central to their professional identity in the twentieth century.

Foremost among the advantages of mental tests was their ability to generate a precise numerical measurement of the psyche. Since the ability to quantify an object, even the unseen ability of the mind, was a hallmark of science, the tests helped convince a sometimes skeptical public that psychology really was a science.

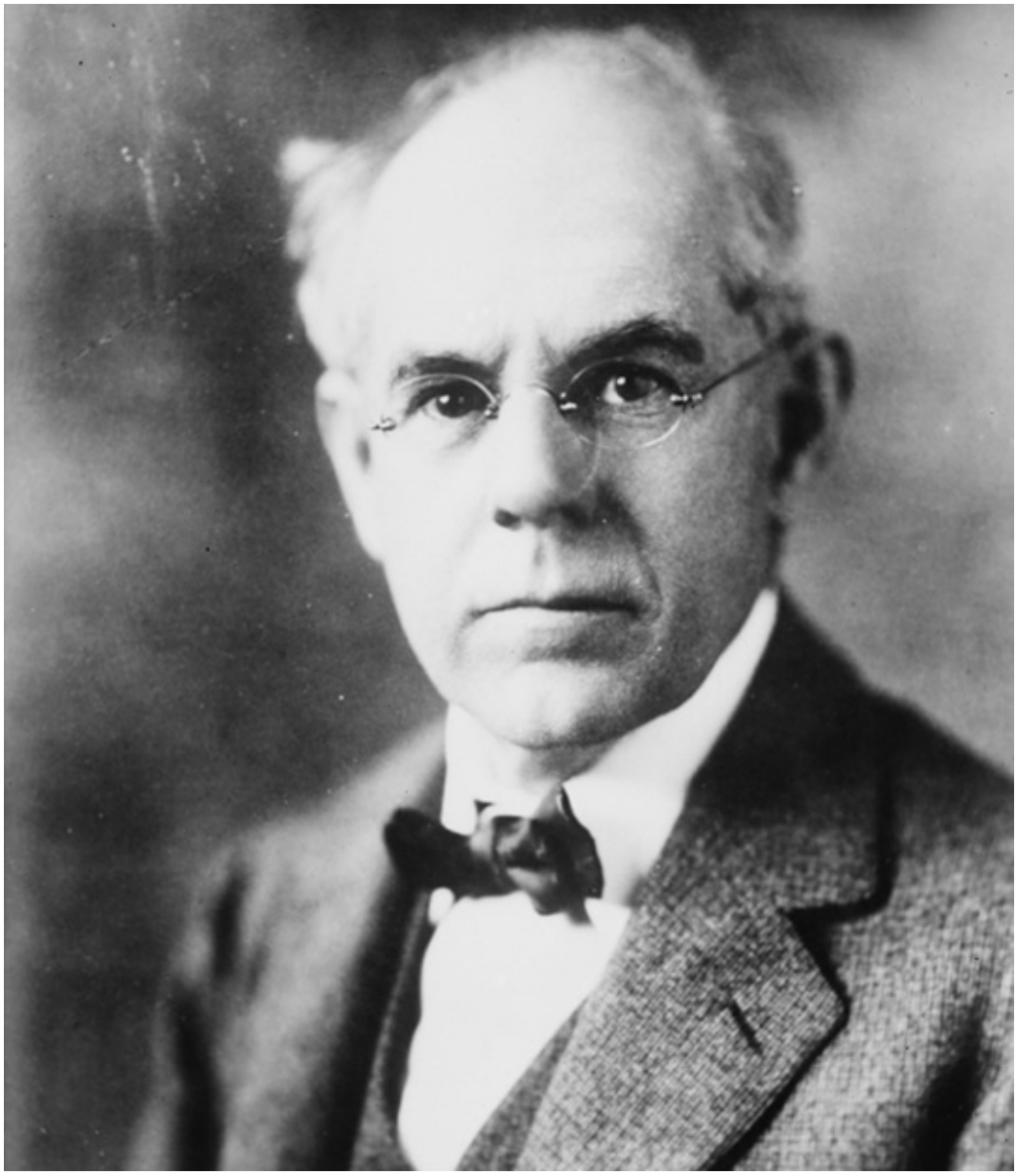
By the early twentieth century, psychologists were deeply involved in the construction of psychological tests. In 1905, psychologist Alfred Binet in Paris constructed the first useful test of intellectual ability, the **Binet-Simon Test of Mental Levels**, which was modified in 1916 for an American population as the Stanford-Binet Intelligence Scale. By then, an intelligence quotient (IQ) had been formulated by German psychologist William Stern (mental age divided by chronological age times one hundred). Since then, millions of people worldwide have been persuaded that intelligence can be captured by a number.

But psychological tests were not restricted to measuring intelligence. By the 1920s the first tests to measure personality were constructed. Business and industry became clients for psychologists who eagerly invented tests to measure vocational interest and aid in personnel selection. During World War I, a psychologist developed the first test to detect mental disorders, the Wordsworth Personal Data Sheet—a set of questions such as "Were you considered a bad boy?" and "Do you feel that nobody quite understands you?" By the advent of World War II, the most widely used such test, the **Minnesota Multiphasic**

Personality Index (MMPI), had been developed.

In less than fifty years, what began as a hope that psychological tests might be useful had become a major industry. Americans, and millions more around the world, had indeed found, as Cattell wrote in 1890, that "individuals, besides, would find their tests interesting, and, perhaps, useful in regard to training, mode of life, or indication of disease."

SEE ALSO Binet-Simon Test of Mental Levels (1905), Projective Tests (1921), Thematic Apperception Test (1935), Minnesota Multiphasic Personality Inventory (1940)



James McKeen Cattell coined the term mental test.

American Psychological Association

1892

G. Stanley Hall (1844–1924)

A few short years after the first laboratory of scientific psychology was opened in Germany, the new discipline had grown fast enough to warrant the establishment of the American Psychological Association (APA) in 1892. The driving force behind its founding was the entrepreneurial psychologist Stanley Hall, who recognized that the time was right to organize the field, as others in such subjects as economics, history, biology, and political science were doing. Once organized, psychology prospered as it made itself useful for the management of an increasingly complex and diverse society.

For its first fifty years, APA membership grew modestly, with only 640 full members in 1940. However, in 1926 a new class of nonvoting members, called associates, was created and saw rapid growth; there were over two thousand associates in 1940. The fact that most of these associates were engaged in applied psychology foreshadowed the explosive growth in the APA after World War II. Growth in APA membership was so great between 1945 and 1970 that one psychologist joked that if the present growth continued, by 2010 every person in the world would be a psychologist. In 2010, in fact, APA had over 150,000 members and affiliates.

The areas of psychology devoted to mental health, clinical psychology, and counseling psychology grew the fastest and remain the dominant specialties of psychology today. Since World War II, APA has had a divisional structure so that members can belong to special-interest groups along with other like-minded members. Nineteen divisions were approved in 1944; since then, thirty-five more divisions have formed to represent interests such as the psychology of women, the history of psychology, psychopharmacology, and others. From a historical perspective, it seems that psychology is too complex a body of knowledge and practice to be represented by only one approach.

SEE ALSO Experimental Psychology (1874), Mental Chronometry (1879), Psychological Tests (1890),

Army Intelligence Tests and Racism (1921)

Sigmund Freud, G. Stanley Hall, C. G. Jung, A. A. Brill, Ernest Jones, and Sándor Ferenczi pose in front of Clark University, Worcester, Massachusetts, 1909.

Jonas Clark Building, Clark University, 2007. Wealthy industrialist Jonas Clark hired G. Stanley Hall to found a college for working-class young men. He established a graduate school instead.

Functional Psychology

1896

John Dewey (1859–1952)

Few individuals can claim to have had as wide-ranging an impact on American life and thought as John Dewey. His influence was most broadly felt in philosophy, psychology, and education. In such a short space as this, however, all that can be done is to indicate merely two aspects of his influence on psychological topics.

Dewey's 1896 article "The Reflex Arc Concept in Psychology" was a challenge to the received wisdom that separated stimulus from response. He argued that such a separation was false; that the two could only be considered together, as one has no meaning without the other. Along with his colleagues, he developed functional psychology, which emphasizes the importance of the social context on how we think and act, and he argued that we should consider how mental activity helps us adapt to the world around us. This approach was counter to Cornell psychologist E. B. Titchener's structuralist approach, the other leading methodology at the time. Structuralism focused on the contents and structure of thought and completely eschewed application.

In Chicago, Dewey began his work on education, in which he had a long-standing interest. His lengthy and notable career as a philosopher and psychologist of education flowed directly from his functionalist psychology, which emphasized the function or action of the mind. He knew from experience that the then-standard practices of drill and rote learning deadened a child's mind. Instead, he proposed the importance of experiential education: children learn best by doing. Teaching is important, but a child must be given an opportunity to act on that instruction, and to make sure it happens, a school must provide opportunities to critically and creatively engage a child with educational materials.

Like Friedrich Froebel, Maria Montessori, and Lev Vygotsky, Dewey believed in a psychology of education that emphasized learning by doing.

SEE ALSO Kindergarten (1840), *The Principles of Psychology* (1890), Casa dei Bambini (1907), Zone of Proximal Development (1934)

E. B. Titchener, who headed the opposing methodology, structuralism.

John Dewey is one of only two American psychologists to be honored with a US postage stamp.

Oedipus Complex

1897

Sigmund Freud (1856–1939)

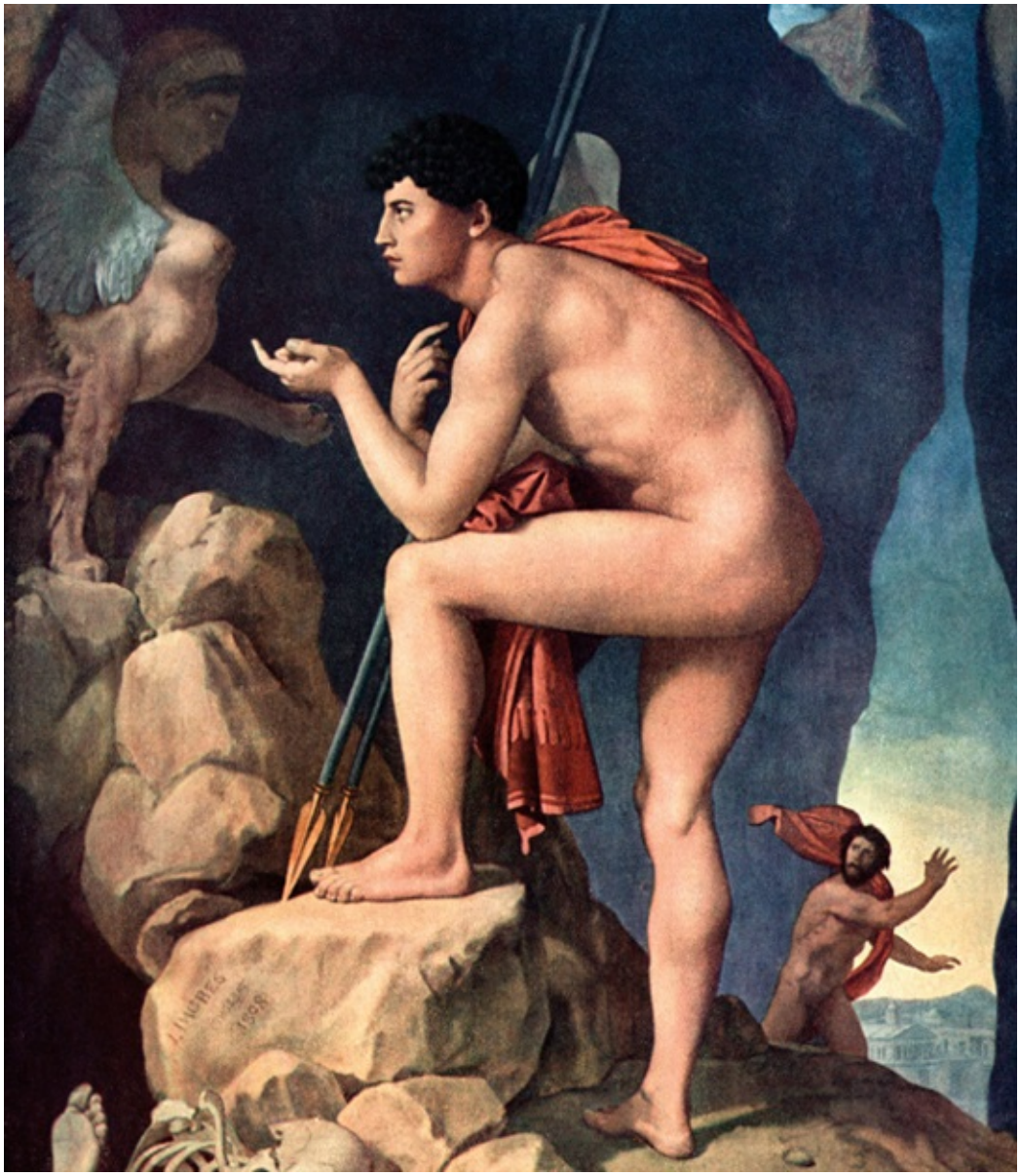
Sophocles's play *Oedipus Rex* (429 BCE) is the story of Oedipus, who unwittingly kills his father, Laius, the king of Thebes, and marries his mother, Queen Jocasta. Oedipus was abandoned by his parents as an infant because an oracle had prophesied these events. As a young man, Oedipus encounters a man on the road, whom he does not recognize as his father, and kills him in a dispute over right of way. He then solves the riddle of the Sphinx: What is the creature that walks on four legs in the morning, two legs at noon, and three in the evening? (The answer is Man.) This grants him access to Thebes and the right to marry the queen, his biological mother. The discovery that Oedipus has, in fact, fulfilled the prophecy of killing his father and marrying his mother sets off a chain of events that includes Jocasta's suicide and his own act of blinding himself.

In 1897, while wrestling with the results of a self-analysis of his dreams after the death of his father the previous year, Sigmund Freud had the insight that the myth of Oedipus contained a fundamental truth about human psychology. He recalled a dream he had after his father's death: he was late for the funeral because he was getting a haircut. Further dream analysis revealed to Freud that he, in fact, harbored many negative feelings about his father, including the wish that his father would die. Parallel to these hostile wishes, Freud found that he also had dreams that represented the desire to have his mother for his own gratification.

Based on his dream analysis, Freud came to believe that he was not unique: it is part of normal development that a child longs to possess the opposite-sex parent and simultaneously be rid of the same-sex parent. Freud called the constellation of impulses and wishes the Oedipus complex. It is, he argued, the crisis point of psychological development, the resolution of which determines the adult personality. The Oedipal complex has remained one of the pillars of classical psychoanalysis, but later analytic theorists have articulated other critical

moments in psychological development.

SEE ALSO Hysteria (1886), Psychoanalysis (1899), *The Interpretation of Dreams* (1900), Psychosexual Development (1905)



Oedipus Explains the Riddle of the Sphinx by *French painter Jean Auguste Dominique Ingres, c. 1805.*

Torres Straits Expedition

1898

William Halse Rivers Rivers (1864–1922)

Near the end of the nineteenth century, a small group of men interested in anthropological questions organized an expedition to the Torres Straits, between Australia and New Guinea. They recruited a young physician and psychologist at Cambridge University, William H. R. Rivers, to go with them.

Rivers, whose specialty was vision, was in charge of the psychological investigations of the islanders. To assist him, he recruited two young psychologists, C. S. Myers, who later coined the phrase **Shell Shock**, and William McDougall. He and his colleagues conducted an elaborate psychological assessment of vision and other sensory and motor abilities, using laboratory equipment adapted for the purpose. More than twenty psychological or psychophysiological phenomena were studied, including olfactory discrimination, vision, pitch threshold, and color perception. A primary rationale for the research was that the Torres Straits' inhabitants had not had much exposure to the norms and mores of Western industrialized countries. Thus they were truly naive about the hypotheses of the research. As Rivers wrote, "The people are sufficiently civilized to enable us to make all our observations, and yet they were sufficiently near their primitive condition to be thoroughly interesting." Rivers and his team found, however, that they could not use introspection as one of their methods, since the concept was totally foreign to the islanders.

The psychologists discovered that, contrary to the myth of heightened sensory powers associated with the "noble savage," most of the sensory abilities tested were in ranges similar to that of Europeans. The psychological research of the expedition also demonstrated that psychology had the methods and the tools to test and clarify knowledge that previously had been based on a priori assumptions or traditions of European superiority. By offering empirical evidence that refuted older claims of racial superiority, the expedition's results opened the door to explanations based on differing environmental experiences.

This proved to be important in the race and intelligence debates that emerged in the 1920s and 1930s in American psychology.

SEE ALSO Culture-Bound Syndromes (1904), Shell Shock (1915)

Members of the 1898 Torres Straits Expedition (left to right): William H. R. Rivers, C. G. Seligman, Sidney Ray, Anthony Wilkin; Alfred C. Haddon (seated).

A nineteenth-century face mask from an island in the Torres Strait, now exhibited at the Reitberg Museum in Switzerland.

The Puzzle Box

1898

Edward L. Thorndike (1874–1949)

Charles Darwin's ***On the Origin of Species*** (1859) opened the door to the study of the mind in humans and animals. Darwin himself authored what is probably the first work of modern comparative psychology, *The Expression of the Emotions in Man and Animals* (1872). Subsequently, Darwin's friend George Romanes, a biologist, published *Animal Intelligence* (1882), which used anecdotes to describe how animals think. He collected descriptions of animal behavior from many sources to come up with reliable inferences about the functioning of the animal mind.

By the end of the nineteenth century, the anecdotal method lost favor, especially among American experimental psychologists. Indeed, in 1898, the publication of Edward Thorndike's experiments eliminated the need for anecdotal accounts of the animal mind. In his doctoral dissertation, Thorndike used puzzle-box experiments with cats, dogs, and chicks to show that animals learn solely by trial and error and reward and punishment. When an animal is placed in an enclosed box, it will display a variety of random behaviors; when it accidentally opens a door so that it can escape and receive food, it will repeat that behavior more quickly each time it is placed in the box. Thorndike concluded that animals do not learn by observation, imitation, or reasoning but purely by association. Further, the animal was not associating the idea or mental image of being in the box with the idea or mental image of escape; rather, the animal correlated a stimulus (being in a certain position in the box) and a response (pushing the pedal to flee).

Not only were Thorndike's conclusions widely accepted, his work also provided a theoretical rationale that justified the use of animals to study human learning. Based on Darwin's argument of the continuity of humans with other animals, Thorndike's animals were analogs for humans: therefore the same principles of learning apply to all animals.

SEE ALSO Behaviorism (1913), *Rattus norvegicus* var. *albinus* (1929), Operant Chamber (1930)

A squirrel is caught red-handed breaking into a bird feeder. Having made the association between such feeders and the promise of food, squirrels will go to impressive lengths—even navigating complicated man-made obstacle courses—to reach their reward.

Pelmanism

1899

William Joseph Ennever (1869–1947)

William Joseph Ennever, the scion of a piano-manufacturing family, created Britain's first popular psychology, Pelmanism, in 1899. Pelmanism derived its name from the Pelman Institute in London, which itself was named after Christopher Louis Pelman, a British psychologist. A technique for self-improvement, Pelmanism became the symbol of Britain's large and growing interest in psychology as applied to improving everyday life.

Practical psychology is the term that was most often used for the many expressions of psychological practice that became popular in Britain in the first forty years of the twentieth century. Such practical psychologies were not university-based sciences, nor were they the province of medical experts. Rather, the appeal of Pelmanism and practical psychologies was that they could be learned by everyone, and with hard work and practice, they would dramatically improve quality of life.

In Britain, disciplinary psychology and **Psychoanalysis** grew very slowly in the first part of the twentieth century; meanwhile, Pelmanism and other practical psychologies were embraced by hundreds of thousands of Britons. The aim of Pelmanism was mental training to help people improve the efficiency of their cognitive processes, especially memory. As it grew in popularity, it was also seen as an aid to general self-improvement.

In addition to Pelmanism, Britons created other popular psychologies. The Psycho-Therapeutic Society, which began in 1901, was linked to older practices such as **Mesmerism**, but it evolved into an organization that promoted psychological healing practices.

The growth of practical psychology was intense after World War I. During the 1920s, the trend was to form local clubs that promoted various self-help psychologies. Eventually, there were so many that a national federation of Practical Psychology Clubs of Great Britain was formed. Many of these clubs published magazines or offered correspondence courses to promote their

approaches, developing apart from disciplinary or professional psychology.

Practical psychology appealed to all classes in Britain, but particularly to members of the working classes, who saw in it a route for upward mobility. The professionalization of psychology after World War II led to the demise of most of these practical psychologies.

SEE ALSO Mesmerism (1766), Phrenology Comes to America (1832), Mind-Cure (1859)

Novelist Sir Henry Rider Haggard (1856–1925) studied Pelmanism.

Caricature from Vanity Fair (1900) of Robert Baden-Powell, the founder of the Boy Scouts movement and a promoter of Pelmanism.

Psychoanalysis

1899

Sigmund Freud (1856–1939)

Trained in Vienna as a neurologist by the leading medical scientists of his day, Sigmund Freud used reason to show that humans often are motivated by forces of unreason, including sex, anger, and fear. His ideas have been explored in literature, drama, painting, and architecture in addition to the clinical fields of psychiatry, psychology, social work, and counseling.

Freud was an excellent student with a voracious intellectual curiosity who chose medicine as his life's work. His education sensitized him to the importance of motivation and the dynamic character of human behavior. His desire to be a great scientist led to six years in a laboratory doing careful studies of the nervous systems of fish and other creatures. After he fell in love with Martha Bernays, he became a clinician in order to have an income suitable for supporting a family.

A fellowship in Paris with the noted neurologist Jean-Martin Charcot led to the clinical insight that trauma plays a role in **Hysteria** by causing ideas to become dissociated from rational thought. Upon his return to Vienna, he learned about the talking cure that his mentor, Josef Breuer, had applied in the case of **Anna O**. in 1880. All of this was used by Freud to formulate the first principles of psychoanalysis. He developed the techniques of dream analysis and free association to gain access to his patients' unconscious. He also first described the clinical phenomena of repression, transference, and countertransference, which became the bedrock of psychoanalytic practice.

Until his death, Freud continued to refine his theory, as he constantly learned from the application of his ideas in an active clinical practice. Freud theorized about children's development, the origin of neuroses, the role of instinctual behavior, and the emergence and use of psychological defense mechanisms. He wrote about the role of religion, which he called an illusion, and articulated why civilization created psychological conflicts. His theoretical and clinical work was the primary contributor to the creation of psychological subjectivity during the

twentieth century.

SEE ALSO Hysteria (1886), Oedipus Complex (1897), *The Interpretation of Dreams* (1900), Jungian Psychology (1913), Defense Mechanisms (1936), Psychosomatic Medicine (1939)

International Psychoanalytic Congress, with Sigmund Freud in the center of the second row, 1911.

The Interpretation of Dreams

1900

Sigmund Freud (1856–1939)

The foundational principles for **Psychoanalysis** were developed by Sigmund Freud from 1886 to 1900. At the end of this period, he published his most important book, *The Interpretation of Dreams.* The book proposed an entirely psychological, rather than neurological, model of the mind. Although Freud constantly revised most of his theories, most of this book's major ideas were articulated in terms that he did not later modify or revise.

The immediate origin of the book's topic was the death of his father, which occurred in 1896. The event caused deep turmoil in Freud's life and left him depressed. After several months, he decided to act as if he were a patient and, using dreams and free association, to analyze himself. It was through this self-analysis that Freud found in dreams the "royal road to the unconscious." His analysis of dreams led him to suggest that dreams have two levels of meaning: the manifest content, which is superficial and does not contain the real psychological meaning of the dream, and the latent content, which is the real meaning dressed in symbolic form. Dreams, Freud suggested, are wish fulfillments whose latent meaning is intended to disguise their socially unacceptable nature. In this way dreams are like symptoms of **Hysteria**, in that both represent ideas or wishes that are too dangerous to be expressed in everyday life. Here Freud had a great insight: he had previously supposed that his patients' reports of childhood sexual experiences represented actual events. Now he saw that these experiences had probably not happened; rather, his patients' memories of them were sexual wishes expressed in symbolic form.

When Freud began to use free association to analyze his own dreams after his father's death, he was shocked to discover many of the same types of wishes in his own dream life. Of greatest importance was his discovery through self-analysis of the existence of the **Oedipus Complex**, a principle that proved critically important for his later work on the development of personality.

SEE ALSO Oedipus Complex (1897), Psychoanalysis (1899), Psychosexual Development (1905), Jungian Psychology (1913), Defense Mechanisms (1936)

Dream *by Catalan symbolist painter Joan Brull, c. 1905.*

Psychology of Testimony

1902

L. William Stern (1871–1938)

Standards for who is qualified to offer testimony in a court of law evolved along with the codification of law. For most of recorded history, women and children were forbidden to testify, as it was believed that they could not be credible. Many other classes of individuals—such as slaves, criminals, and the poor—have also been excluded at various times. By the beginning of the twentieth century, however, the possibility of improving testimony was suggested by psychologists.

German psychologist William Stern was the first to do applied research on the psychology of testimony. Previously, in late-1870s Germany, the first laboratories of **Experimental Psychology** were established; by the 1890s Germans had developed a full-fledged study of applied psychology, too. In 1902, as Stern initiated his research program on legal psychology, the first courses were being offered on law and psychology at various universities. For example, Max Wertheimer, best known as the founder of **Gestalt Psychology**, completed his dissertation on determining the truthfulness of testimony in 1904. In the United States, the first application of psychology to the study of testimony was made by German émigré psychologist Hugo Münsterberg in 1908.

An enduring problem in the psychology of testimony has been the disjuncture between laboratory studies, where many variables can be controlled, and the complexity and messiness of actual trials. Nevertheless, by the 1980s in the United States, a robust body of research findings began to accumulate. Eyewitness testimony has become a particularly problematic arena: on the one hand, psychologists have developed expertise in how to improve the questioning of witnesses as well as methods to elicit reliable testimony. On the other hand, psychologists have also shown that memory is easily manipulated and thus unreliable, as in the case of false memory syndrome.

SEE ALSO The Lie Detector (1913), Remembering and Forgetting (1932), Misinformation Effect (1994)

Nazi defendants listen to the tribunal proceedings during the Nuremberg Trials, held in 1945 and 1946. Hermann Göring, who was instrumental in Hitler's rise to power, sits farthest left in the picture, in the front row.

Psychotechnics

1903

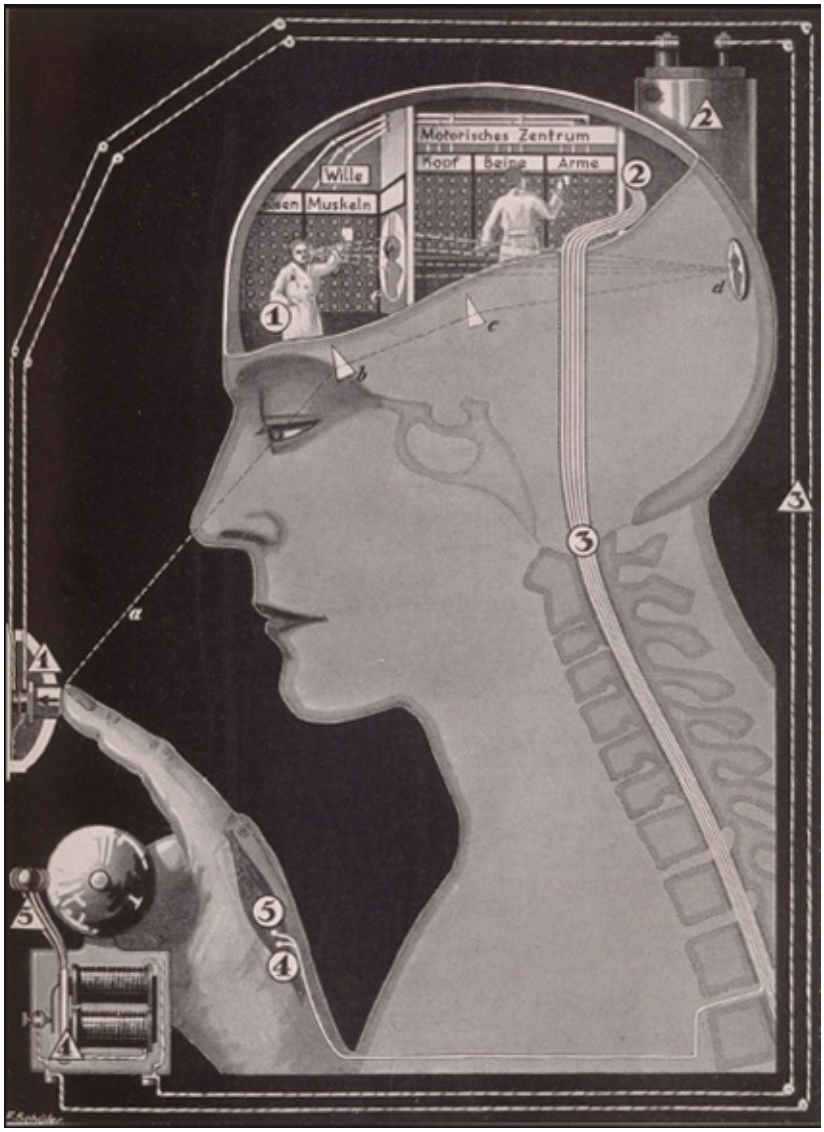
L. William Stern (1871–1938)

In the mid-1920s, female German switchboard operators protested what they saw as the extensive use of psychological tests intended to regulate nearly every aspect of their work lives. Such tests were part of a widespread movement in European and North American workplaces to manage the environment and increase productivity. *Psychotechnics* was the name used for such practices in Europe, while the terms *industrial psychology* and *business psychology* were employed in North America. The word *psychotechnics* had been coined in 1903 by German psychologist William Stern and popularized by Harvard University professor Hugo Münsterberg in his book *Psychology and Industrial Efficiency* (1913).

Why was it successful? The Bolshevik Revolution in Russia (1917) stoked fear in other European countries about social and political unrest caused by problems between labor and industry management. There were also significant labor shortages due to the incredibly high casualty rate in World War I. In many European countries the war resulted in major damage to the industrial infrastructure, prompting a need and opportunity to rebuild and restructure on a more rational basis.

Psychotechnics caught on as a popular applied psychology in many European countries, but it had its greatest impact in Germany. The field grew rapidly after World War I as successive German governments sought to use psychotechnics as part of the reconstruction and stabilization of the country. The intent was to make work a matter of routine and thus reduce stress, especially for women in the workforce. By the mid-1920s distrust had grown as workers noticed that psychotechnics favored employers, and employees became fearful that the results would be used to exploit them. This reflected a growing sense in Germany of the overregulation and control of life, as depicted in Fritz Lang’s classic film of this era, *Metropolis* (1927).

SEE ALSO *Cheaper by the Dozen* (1924), Hawthorne Effect (1927)



This c. 1927 illustration by German artist Fritz Kahn comparing the nervous system to an electronic signaling system, with the brain as an office where messages are sorted, is reflective of the ideology and practice of psychotechnics in the early twentieth century.

Classical Conditioning

1903

Ivan Pavlov (1849–1936)

Russian physiologist Ivan Pavlov insisted that the scientific study of the nervous system and its expressions must be objective, mechanistic, and materialistic in orientation. Pavlov was born and reared in central Russia, the son of a village priest. Initially, it seemed as though Pavlov would follow in his father's footsteps, but a growing personal interest in science led him to the University of Saint Petersburg, where he earned a degree in physiology.

By 1890, Pavlov was the director of the department of physiology at the university's Institute of Experimental Medicine. Pavlov's specialty was the study of digestion, for which he was awarded the Nobel Prize in physiology or medicine in 1904. Dogs were Pavlov's subject of choice for his experiments. When his work on digestion in the stomach came to an end, Pavlov began to study salivation as a necessary part of the digestive processes. In 1903, one of the dog handlers in Pavlov's laboratory observed that the dogs began salivation even before they were fed. When this came to Pavlov's attention, he experimentally investigated what he called the "psychic processes" involved in the phenomenon.

Pavlov explored how external stimuli could be manipulated to control behavior. His most famous example came to be called classical conditioning in English. It was a convincing demonstration that when a ringing bell is presented in association with the offering of food, dogs will become conditioned, or learn, to salivate even without food being offered. Pavlov claimed that such conditioning was a matter of processes in the nervous system itself and not a matter of the mind. Thus learning in the dog, and by extension in humans and other animals, was a matter of forming elementary associations that then led to the formation of chains of associations. For many years, Pavlov and his team explored the implications of his model of learning, including how it might explain mental disorders.

SEE ALSO Experimental Neurosis (1912), Behaviorism (1913), *Rattus norvegicus* var. *albinus* (1929)

Ivan Pavlov in his laboratory, 1922.

Bronze statue of Pavlov and one of his dogs, located on the grounds of his laboratory in Koltushi, Russia.

Adolescence

1904

G. Stanley Hall (1844–1924)

The writings of Charles Darwin inspired ideas about child development among the first generation of the new scientific psychologists in America. From Darwin they drew hope that the study of the child would shed light on the mental evolution of *Homo sapiens.* G. Stanley Hall, one of the founders of American scientific psychology, espoused evolution as the basis for child study. In particular, recapitulation theory—the concept that ontogeny (or development) recapitulates phylogeny (or evolution)—proposed that the evolutionary history of a species is replayed in the development of individual members of a species; for example, a human fetus has gills and the beginnings of a tail at certain points in gestation. After birth, it was believed, one could trace the mental development of the human species by careful observation of the growing human child. There were also important social benefits to understanding childhood: in an increasingly complex and diverse society, child study could provide insight into creating an optimal social order.

Still, until 1904, theorists of education and psychology did not remark upon the developmental differences of older children. In 1904, Hall published a landmark two-volume study in which he described a new developmental stage: adolescence. Hall saw this period as crucial to the health of any society and believed that it held insights into the mental development of the human race. Its implications for human development are indicated by the full title of the study —*Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education.* He argued that this was a new stage, created by the prohibition of child labor and compulsory education. Thus instead of becoming adults, children of this age remained dependent, resulting in the storm and stress of maturing bodies and minds.

SEE ALSO Rousseau’s Natural Child (1762), Baby Biographies (1877), Zone of Proximal Development (1934), Ecological Systems Theory (1979)

Four Girls by *German expressionist August Macke*, *1912–1913.*

Culture-Bound Syndromes

1904

Emil Kraepelin (1856–1926), **Arthur Kleinman** (b. 1941)

Are psychiatric disorders best understood within a particular cultural context? That is, are they culture-bound? A growing body of evidence indicates that we cannot assume that human beings experience mental and emotional distress in the same ways or that treatment of such distress is easily exportable from one culture to another. While cultural differences in mentality have been noted for centuries, it was psychiatrist Emil Kraepelin who wrote about the necessity of taking cultural considerations into account in 1904:

> The characteristics of a people should find expression in the frequency as well as the shaping of the manifestations of mental illness … so that comparative psychiatry shall make it possible to contribute to the understanding of pathological psychic processes.

It was initially the fieldwork of medical anthropologists that raised questions about the role of culture in health and disease, including mental health. Psychiatrist Arthur Kleinman's *Patients and Healers in the Context of Culture* (1980) helped set off the contemporary debate on culture-bound syndromes. Psychologist Anthony Marsella has written extensively about culture and depression, pointing out that in many cultures, depression is often expressed through the body, with such symptoms as back pain or stomach distress.

In recent years, there has finally been recognition by American psychiatrists that some behaviors are culturally prescribed ways of describing distress that may or may not have psychopathological significance. Two culture-bound syndromes will serve as examples:

> **Koro** (East and Southeast Asia): an episode of sudden and intense anxiety in which the penis (or in the rare female cases, the vulva and nipples) will recede into the body and possibly cause death

Anorexia nervosa (North America, western Europe): severe restriction of food intake, associated with morbid fear of obesity

These syndromes indicate the important role that cultural beliefs and mores play in determining mental health and illness.

SEE ALSO Torres Straits Expedition (1898), American Classification of Mental Disorders (1918), The Golden Cage (1978)

Voodoo altar with several fetishes in Abomey, Benin, 2008. West African followers of the Vodun religion believe that such objects possess divine powers of rejuvenation.

Psychosexual Development

1905

Sigmund Freud (1856–1939)

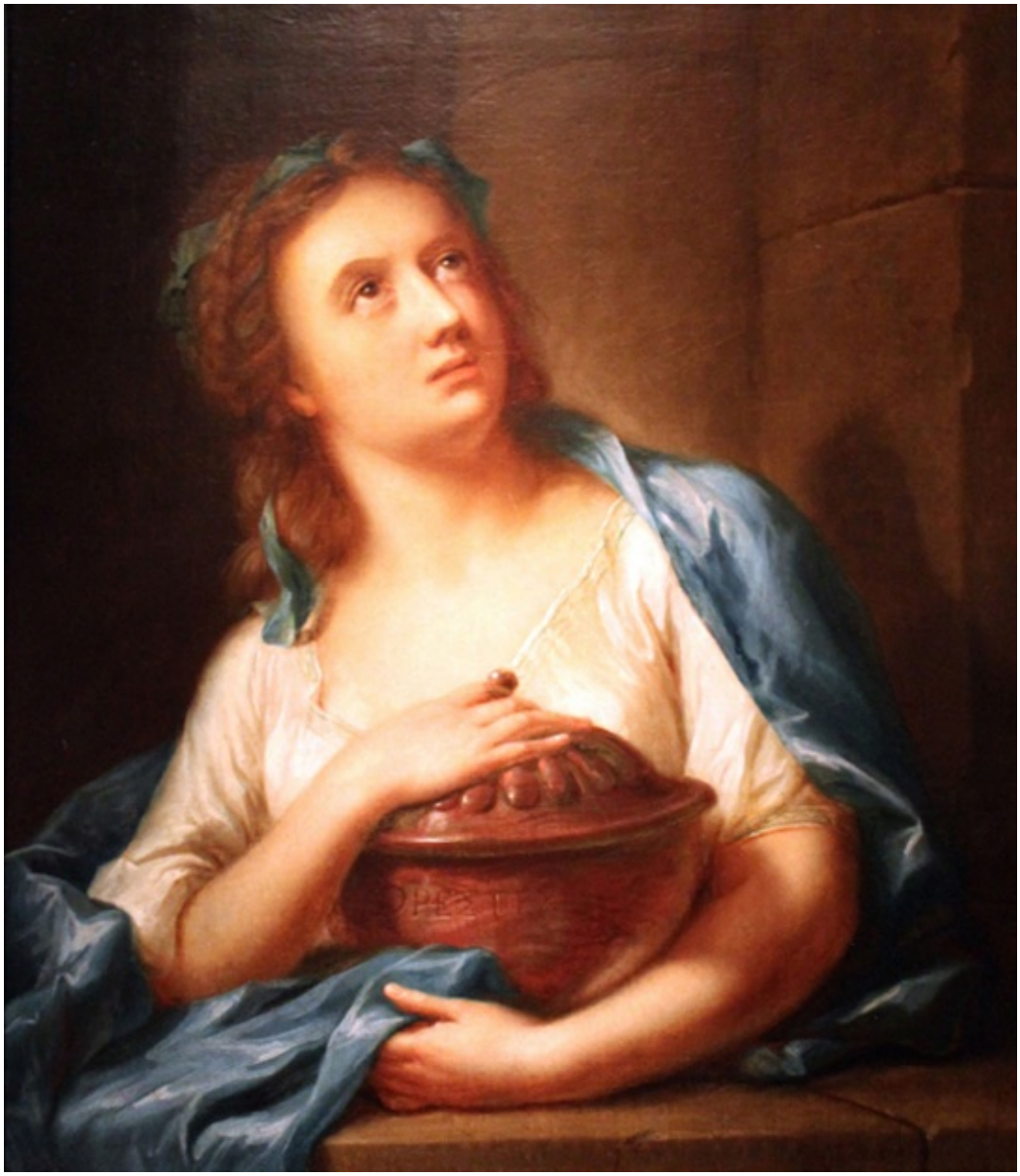
Sigmund Freud suggested that a normal part of psychological development is the experience of the **Oedipus Complex**, in which the child longs for possession of the parent of the opposite sex and the demise of the same-sex parent.

Freud's clinical and theoretical work led him to posit that children from the time of birth are polymorphously perverse, or capable of experiencing pleasure from the stimulation of any part of the body. As physical and psychological development progresses, specific parts of the body become the focal points of pleasure. These erogenous zones change with each stage, linked to a particular part of the body where pleasure is most intense. These psychosexual stages are oral, anal, phallic, then a period of latency, and finally the genital stage.

In the oral stage, pleasure is gained primarily through the mouth. As the child develops, say from age two to three, the erogenous zone becomes the anus, with the socially acceptable expression of pleasure being bowel control. In the phallic stage of psychosexual development, pleasure is gained from the child's own genitals. A heightened attention to pleasure occurs, resulting in the Oedipal conflict; how the child handles the conflict determines the adult personality. The immediate, always imperfect, resolution of the conflict comes when the child identifies with the same-sex parent. The child then enters the latency period, where there is little psychosexual development. At the onset of puberty is the genital stage, in which the normal and acceptable expression is interest in the genitals of a person of the opposite sex, eventually compelling the child to fulfill the social norms of procreation within the conventions of heterosexual marriage.

According to Freud, things can and do go wrong at any point in psychosexual development, with serious implications for the adult. The serious work of **Psychoanalysis** is to mitigate the always-present failure of psychosexual development. As Freud famously put it, the goal of psychoanalysis is to move the patient from misery to common unhappiness.

SEE ALSO Hysteria (1886), Oedipus Complex (1897), Psychoanalysis (1899) *The Interpretation of Dreams* (1900)



Electra Mourning, *a painting by German artist Johann Heinrich Tischbein the Elder, 1784. In 1913, Freud's collaborator Carl Jung proposed the Electra complex—the female equivalent to the Oedipus complex—which occurs during the third, phallic psychosexual stage and takes its name from the Greek mythological character who, along with her brother, Orestes, plotted matricide against their mother, Clytemnestra.*

Binet-Simon Test of Mental Levels

1905

Alfred Binet (1857–1911), **Théodore Simon** (1872–1961)

By the early twentieth century, France had fallen behind its archrival Germany in industrial production. To catch up, pressure was exerted on schools to do a better job educating French children. The teachers complained, however, that classes were too large and that too many “subnormal” children were mixed in with those of normal ability.

To help them solve this problem, the French government turned to Alfred Binet, a psychologist known for his work with children. Binet’s first attempt to develop tests failed. He was then joined by Théodore Simon, a young physician who worked at a large institution for the mentally impaired. Binet and Simon could now compare the results of their tests with children of both average and below-average ability.

Binet had an important insight: although both groups of children were able to pass the same kinds of tests, the normal children did so at a younger age than the subnormal children. With this insight, Binet and Simon developed a set of thirty tasks of increasing levels of difficulty, starting with very simple tasks, such as shaking hands with the tester, up to very complex tasks that even the oldest children had difficulty with, such as defining abstract words. Children would then progress through the tests, stopping at the point where they could no longer pass. Their achievement would be noted and compared to the age corresponding to that level. This was referred to as the child’s “mental level.” Any child who fell two years or more behind his or her age peers in performance was identified as subnormal and could be placed in a class appropriate to his or her mental level.

The Binet-Simon test, first published in 1905, underwent revisions in 1908 and 1911, and it was adapted for use in America in 1916. Binet continued to believe that intelligence was not fixed and that a test such as his should not be used to predict future performance: it was only a snapshot in time.

SEE ALSO Psychological Tests (1890), Projective Tests (1921), Thematic Apperception Test (1935), Minnesota Multiphasic Personality Inventory (1940)

Alfred Binet.

RECORD BOOKLET — Form L
FOR THE REVISED STANFORD-BINET SCALE
as described in Terman and Merrill's Measuring Intelligence
No.
Series.
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Name
Examiner
C.A.
Sex
Birthdate
Date
School
Grade
Parent
Birthplace
Occupation of father
Race

Collage of materials from a 1930s edition of the Stanford-Binet Test.

The Emmanuel Movement

1906

Elwood Worcester (1862–1940), **Samuel McComb** (1864–1938)

On a cold, wet night in November of 1906, almost two hundred men and women gathered in Boston's Emmanuel Church to receive help for a variety of problems, both psychological and medical. Four men—two physicians and two clergymen—spoke to the group about topics ranging from the healing ministry of Jesus to recent psychological research on the unconscious mind. The church's rector, Elwood Worcester, invited those present who wanted to discuss their moral or psychological problems to return the following morning. Many did so, and the first successful union of religion, psychology, and medical science in America was born.

The Emmanuel Movement, as it was quickly labeled, was led by Worcester and his assistant, Samuel McComb. They were initially assisted by several prominent Boston physicians. The church offered free medical exams and adult-learning classes on topics in psychology, medicine, health, and lay psychotherapy. It was the psychotherapy component that drew the most attention, both positive and negative. In Boston, a number of physicians and psychologists had been offering mental counseling for some years, but psychotherapy was not widely known outside of Boston. The movement's success in Boston led to demands for similar church-based clinics and counseling centers in other cities.

At first Worcester provided the training for the lay therapists who worked in the clinics. The training and the therapy drew upon the psychological research in Boston, as well as the older indigenous ideas of **Mind-Cure** and mental therapeutics. Pastoral counseling began here, and the people who founded Alcoholics Anonymous were influenced by the work of the church's social services department. The success and notoriety of the Emmanuel Movement also prepared Americans for the arrival of Sigmund Freud's **Psychoanalysis** just a few years later.

SEE ALSO Mind-Cure (1859), *The Principles of Psychology* (1890), Psychoanalysis (1899), Cognitive Therapy (1955), Biopsychosocial Model of Health (1977)

A priest provides spiritual guidance to a male patient at Saint Elizabeth's Hospital. Pastoral counseling was one of the first modern applications of psychological therapies.

Birth Order

1907

Alfred Adler (1870–1937)

Why are children from the same family so different from each other in personality and intellectual ability? This is a question posed by psychologists for over a hundred years. Psychoanalyst Alfred Adler proposed a theory of birth order that posited that firstborns receive the lion's share of parental attention and affection. With the birth of a second child, however, the elder child feels dethroned, while the second child is likely to suffer from feelings of inferiority. The last-born child in a family may suffer from being spoiled by parents. Adler theorized that the poorest outcome would be for the firstborn, due to the responsibility of being the eldest. The middle child, in Adler's theory, was most likely to be the strongest psychologically. Research since Adler first proposed his hypotheses, in 1907, has not supported his contentions.

Personality theorists have suggested that early-born children were more likely than later-born children to seek to conserve traditional family values. Historian of science Frank Sulloway used this idea to further explore birth order's effects on creativity and openness to experience in his book *Born to Rebel* (1996). He argued that first-or early-born children find an advantage in maintaining family connections. Later-born children, however, are more likely to try new ideas and practices, and many find success by breaking away from family traditions. Charles Darwin is a prime example of Sulloway's *Born to Rebel* hypothesis: he was the fifth of six children.

Psychologist Robert Zajonc proposed a confluence model of birth order in which he theorized that with each additional child, the family's intellectual resources are diminished. Other implications of larger families are that there are simply fewer resources of all kinds available to each additional child.

More than a century's worth of research indicates that firstborn children tend to greater accomplishment than later-born children. This is not the same as saying that only firstborns are likely to be accomplished; in fact, there have been great achievements by persons born first, born fourth, and even born tenth.

SEE ALSO Baby Biographies (1877), Psychosexual Development (1905)

The Marx Brothers (top to bottom): Chico, Harpo, Groucho, and Zeppo. Photograph by Ralph F. Stitt, 1931.

Inferiority Complex

1907

Alfred Adler (1870–1937)

Perhaps one of the most widely used psychological terms in the English language is *inferiority complex.* The person who originated the term, Alfred Adler, was born in Vienna and grew up a sickly child, suffering from a variety of illnesses that impeded him physically. He developed an intense rivalry with his older, more physically able brother, which lasted his entire life. He decided to become a physician partly in response to the care he had received that had saved his life on more than one occasion.

Freud's ***The Interpretation of Dreams*** (1900) was published a few years after Adler started his practice. The book inspired him, and he publicly defended it against its many critics. Adler was part of Freud's inner circle for a few years, but he left when he realized his theoretical differences with Freud would make it impossible for them to work together. While Freud posited sex as the basic human motivation, Adler came to believe that social interests and power were most important.

The origin of Adler's concept of the inferiority complex was his work on organ inferiority: some bodily organs are weaker and more susceptible to illness than others; however, through training they can become strong. In his book *The Neurotic Character,* published in 1907, Adler extended this concept to human psychological abilities, coining the term *inferiority complex.* He argued that all children are affected by feelings of inferiority because of physical size and lack of power, as he had been with his older brother. On a deep psychological level, the child seeks to compensate for these feelings of powerlessness and inferiority. With growth and into adulthood, the person continues to seek ways to overcome feelings of inferiority, and this motivation is what leads to achievement. Deep feelings of inferiority, however, are hard to overcome and may limit the person's growth. It was to help such individuals that Adler developed what he called Individual Psychology.

SEE ALSO Psychoanalysis (1899), Psychosomatic Medicine (1939)

Children's Games *by Flemish Renaissance artist Pieter Brueghel the Elder, 1560. According to psychologist Alfred Adler, such childhood activities as mock tournaments are the source of inferiority complexes that can last a lifetime.*

Casa dei Bambini

1907

Maria Montessori (1870–1952)

In 1896, an attractive and dynamic young Italian doctor attended the International Women's Conference in Berlin, where she spoke eloquently about the value of women in promoting social hygiene and addressing the needs of what were then called feebleminded children. Maria Montessori became one of the most famous women in the world as an effective advocate of feminism and the founder of what remains one of the most popular educational methods in the world.

Montessori began her studies in medicine at the Sapienza University of Rome, or La Sapienza, in 1890. Only five Italian women had ever become doctors at that point. Her early medical work was with children with intellectual disabilities, but she also became an internationally sought-after speaker for feminist causes.

In the early 1900s, education became Montessori's focus. She sought to place Italian education on the foundation of the new **Experimental Psychology**, much as Alfred Binet was doing in France. In 1906, she was invited to head the educational efforts of the private Italian real-estate board, which wished to open schools in their new apartment buildings in a Roman working-class neighborhood. These schools became known as Case dei Bambini ("Children's Houses"). The first Casa was opened in January of 1907 with Maria Montessori as the education director. Over the next two years, she developed what became known as the Montessori method. Within five years, the method had spread around the world, aided by more than two hundred publications in multiple languages.

The Montessori method emphasizes the need to allow the child freedom of play and a variety of choices of educational materials in a room furnished with child-size seats and tables. It was intended to honor the autonomy and independence of each child. Over time, there have been many modifications, but the essential spirit of freedom that Montessori introduced remains today in the

hundreds of thousands of Montessori schools around the world.

SEE ALSO Kindergarten (1840), Functional Psychology (1896), Zone of Proximal Development (1934), Psychological Lifespace (1935)

Maria Montessori, 1913.

Edward Harden Mansion in Sleepy Hollow, NY—the first Montessori school to open in the United States.

Yerkes-Dodson Law

1908

Robert M. Yerkes (1876–1956), **John D. Dodson** (1879–1955)

One of the best known principles in modern psychology is named after the comparative psychologist Robert M. Yerkes and his Harvard University graduate student John D. Dodson. As first formulated, the Yerkes-Dodson law states that moderate levels of motivation are best for learning and recall. Initially, the two men thought that high levels of motivation would produce the highest rates of learning. They used a painful shock as a motivating stimulus and found that increasing the intensity of the shock leads initially to higher rates of learning to avoid it, but once the intensity passed a moderate level, it actually interfered with learning. This results in an inverted U-shaped learning curve.

Hundreds of studies have been conducted since Yerkes and Dodson first reported their surprising results in 1908. Over the course of the twentieth century, researchers began to use the word *arousal* rather than *motivation* to describe how the law works, and they described levels as *optimal* rather than *moderate.* The Yerkes-Dodson law is now seen as part of a more general arousal theory whose basic principle is that performance varies with arousal. The principle found in the law has been tested in terms of athletic performance, stress response, test taking, and dozens of other settings. Results have varied; thus what counts as a moderate or optimal level of arousal has been shown to differ across types of tasks. Optimal levels of arousal for arduous physical tasks are higher than for intellectual tasks. The optimal arousal level for learning difficult material or for material that requires intense concentration is lower than for learning comparatively simpler or boring material. A clinical variation suggests that anxious individuals are likely to perform better than nonanxious individuals when a test is easy, but worse when the test is difficult.

SEE ALSO Antianxiety Medications (1950), Universal Expression of Emotions (1971)

A humorous cartoon from the 1936 Berlin Olympics envisages the year 2000: television technology has progressed to the point where spectators can watch events at home while radio, applying "wireless" technology, carries their promptings and applause to loudspeakers in the stadium. Yerkes-Dodson law contends that athletes require high levels of arousal for peak performance.

A classroom in Mennonite Heritage Village in Steinbach, Manitoba, Canada. According to the Yerkes-Dodson law, the optimal arousal level for learning difficult material is lower than for learning simple material.

The Schizophrenias

1908

Paul Eugen Bleuler (1857–1939)

What we now refer to as schizophrenia has almost certainly existed throughout human history, but it was not until 1908 that it was given its current label by psychiatrist Eugen Bleuler. At the time, Bleuler was the director of the leading psychiatric hospital in Europe, the Burghölzli, in Switzerland. He became its director in 1898, and during his tenure, many of the leading figures in psychiatry worked with him, including Carl Jung and Hermann Rorschach. Bleuler disagreed with the existing term for the condition, *dementia praecox*, because his clinical experience showed him that patients did not typically become demented, nor was the onset always in youth (the meaning of the word *praecox*).

The schizophrenias are characterized by delusions, hallucinations, and disordered thought. The subtypes of the disorder are catatonic, disorganized, paranoid, and undifferentiated. Each subtype has its own characteristic patterns. The paranoid type, for example, may have delusions of persecution or grandeur, as one patient explained in the following passage from Bleuler's *Dementia Praecox*: "Inside it is as if I were Christ or the Apostles. Twenty-six Apostles are on the Mount of Olives in my arms." It is not uncommon for multiple patients in the same hospital to have identical delusions, as in the famous case of the "three Christs of Ypsilianti"; in a hospital in the Washington, D.C., area, two patients, similar in age, both believed they were the legitimate sons of John F. Kennedy. It also is common for those suffering from one of the schizophrenias to invent neologisms, or to coin new meaningless words and phrases: for example, one person might spit "cage-weather juice," while others have been "botanized" or "blued-off."

Despite more than a hundred years of research, there is no known cause for schizophrenia; it is likely that there are multiple causes. The study of identical twins indicates a strong genetic component. A 2012 report indicated that at least five disorders share a common genetic link: schizophrenia, bipolar disorder, **Autism**, major depression, and attention deficit hyperactivity disorder.

SEE ALSO Bedlam (1357), American Classification of Mental Disorders (1918), Antipsychotic Medications (1952)

Eugen Bleuler, c. 1900.

Self-Portrait with Straw Hat *(Winter 1887/88) by Dutch post-Impressionist Vincent van Gogh, who is thought to have suffered from schizophrenia or manic depression. He died at the age of 37 from a self-inflicted gunshot wound.*

Apes and Language

1909

Lightner Witmer (1867–1956), **William H. Furness III** (1867–1920)

Philadelphia in 1909 witnessed a remarkable demonstration by Peter, a sophisticated chimpanzee. Peter appeared on stage and skated, rode a bicycle, ate with a fork, and smoked a cigarette. Peter was "born a monkey and made himself a man," according to publicity for the show. Two men observed the show very carefully—psychologist Lightner Witmer and famed explorer William H. Furness III. Witmer, who had recently established a psychology clinic to help children with problems that included speech and language, speculated whether an ape as intelligent as Peter could be taught to talk. Peter got no further than *mama,* but Furness was able to teach a companion orangutan two words: *papa* and *cup.*

There had long been fascination among comparative psychologists and other natural scientists about the capacity of apes to learn human speech and whether apes had a language of their own. On the latter question, explorer and scientist Richard Garner documented ape vocalizations in the wild that appeared to be a form of communication. Garner's claims were supported by psychologist Robert Yerkes, who in the 1920s identified at least thirty-two wordlike sounds that two chimps used.

In the 1930s, two psychologists, Luella and Winthrop Kellogg, raised a young female chimp named Gua in their home alongside their infant son. Gua did not learn to talk but clearly understood many words. Twenty years later, a baby chimp, Viki, was brought to live with psychologists Keith and Catherine Hayes. Viki lived to be seven and learned a few words: *mama*, *papa,* and *cup.* Again, Viki understood quite a few words and also succeeded in teaching Cathy several chimp vocalizations. In the 1960s, Washoe, a chimpanzee, learned to correctly use more than thirty signs and understood many others. Since then, a variety of methods have been used to try to teach apes to communicate using some kind of

symbolic language. The jury is still out.

SEE ALSO *On the Origin of Species* (1859), Language Acquisition Device (1965)

Photograph of a chimpanzee sitting in bed while on the telephone and smoking a cigar.

Psychology of Music

1911

Carl Stumpf (1848–1936)

In the nineteenth century, Berlin was the center of the new German colonial empire, and it was there that the study of music from around the world had its greatest support. Later, as the modern disciplines of anthropology and psychology developed, the study of music and culture was considered within the scope of both disciplines. It was Carl Stumpf, a philosopher and psychologist, who established the psychology of music as a scientific field. Stumpf had already published his landmark study of auditory perception when he turned to the study of ethnomusicology, beginning a scientific journal, *Beiträge zur Akustik und Musikwissenschaft*, in 1898.

His landmark volume, *The Origins of Music* (1911), was based on more than twenty-five years of research on psychology, music, and culture. Stumpf offered an account of how music originated and discussed all the extant theories of music as well as the history of musical instruments. The core of the book is his cross-cultural analysis of music from around the world. His point was to demonstrate the basic psychological principles of how musical tones are organized. The book became the foundation volume for comparative musicology and paved the way for the modern discipline of ethnomusicology.

After he took a position in Berlin, Stumpf began collecting samples of music from around the world, which was remarkable given the comparatively limited technology of the time. He established the Berliner Phonogramm-Archiv in 1900 to house his collection of Edison cylinders (the earliest commercial recording device), which he had gathered from travelers. This became one of the world's great collections of music.

As a scientific field, the psychology of music found a home in many countries beyond Germany. In America, Carl Seashore, one of the first scientific psychologists, developed an extensive program of tests for musical aptitude. The Seashore Measures of Musical Talent became the standard assessment for entry into many of America's best schools of music.

SEE ALSO Gestalt Psychology (1912), [B = f(P, E)] = The Lifespace (1936)

A 1777 copy of the so-called "Bologna Mozart" by an unknown artist. The Viennese composer, who lived between 1756 and 1791, is among the most enduringly popular of all classical composers.

Gestalt Psychology

1912

Max Wertheimer (1880–1943), **Kurt Koffka** (1886–1941), **Wolfgang Köhler** (1887–1967)

Beginning around 1910, a group of young psychologists—Max Wertheimer, Kurt Koffka, and Wolfgang Köhler—began to develop the Gestalt theory in psychology during an era in which personal and national wholeness became an important part of the fabric of German life. They called their approach Gestalt theory, though it is more often referred to as Gestalt psychology. (The term *Gestalt* has no exact equivalent in English, but roughly corresponds to "form" or "configuration.") Wertheimer published his experimental results on apparent movement, the so-called phi phenomenon, in 1912. The perceived motion, he argued, was a Gestalt and not reducible to individual elements, thus it was not explicable in terms of associations. The insistence on studying the relationship between the part and the whole in terms of perception and cognition led the Gestalt psychologists away from the analysis of the constituents, or individual elements, of mental structures and psychic processes.

The Gestalt psychologists developed an approach that articulated the psychological richness of life. Wertheimer, his peers, and their students brought their relational research to studies of perception (e.g., figure-ground relationships), language, symbolic thought, and insight in ways that yielded new understandings. They conducted their work in the service of helping to solve philosophical problems, especially questions of epistemology and cognition.

Perceptual organization remains the best known example of Gestalt theory. The most general principle is the law of Prägnanz, which states that there is a tendency toward the organization of any whole or Gestalt into as good or as simple a structure as conditions permit. Specific examples of the law of Prägnanz include the laws of proximity, similarity, continuation, and closure. Although the Gestalt theorists all left Germany under duress during the Nazi era and were never able to gain equivalent positions in the United States, their

influence in our current era remains in social and cognitive psychology.

SEE ALSO Psychology of Music (1911), Psychological Lifespace (1935), [B = f(P, E)] = The Lifespace (1936)

Max Wertheimer, a founder of Gestalt psychology, with a tachistoscope, a key psychological laboratory instrument of the period, used to present visual stimuli for controlled durations.

Experimental Neurosis

1912

Mariya Yerofeyeva (1867–1925), **Nataliya Shenger-Krestovnikova** (1875–1947)

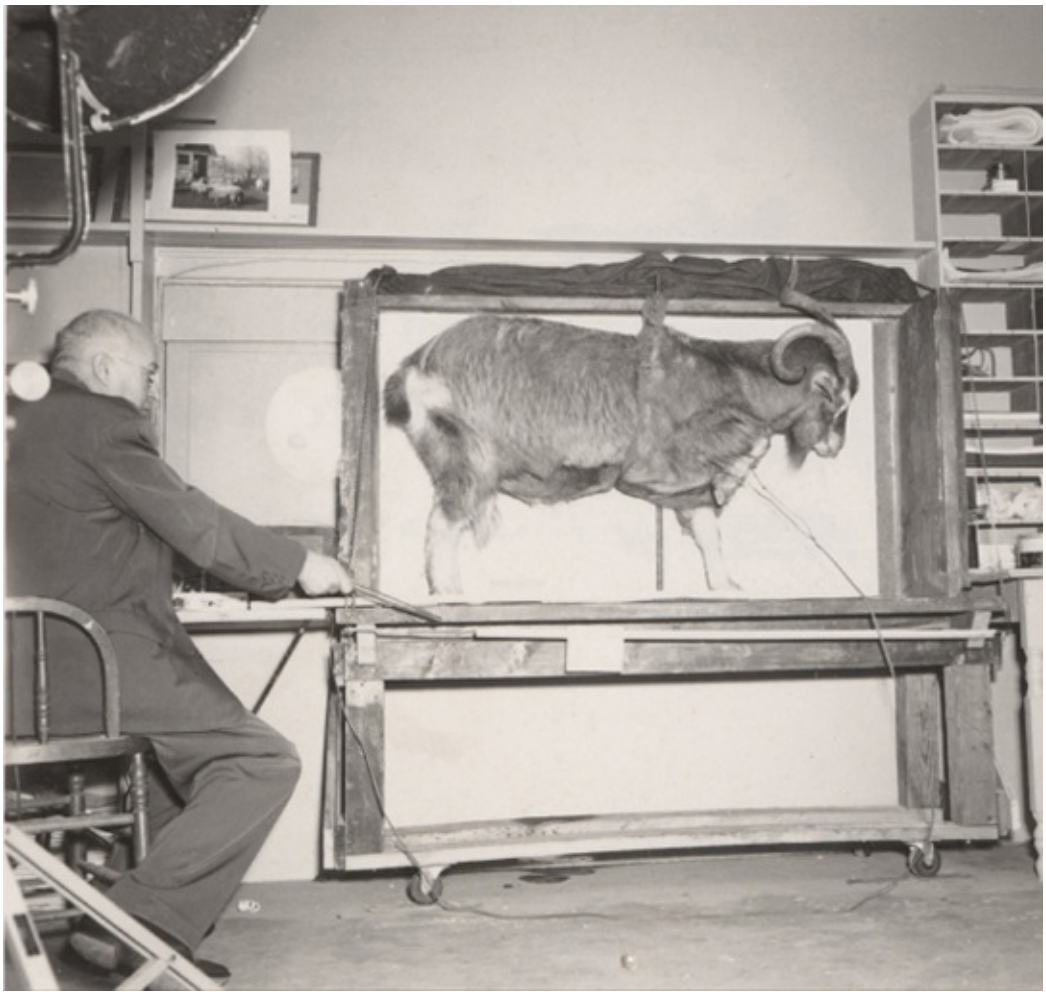
Ivan Pavlov's laboratory of physiology at the Institute of Experimental Medicine in Saint Petersburg, Russia, was a busy place in the early twentieth century. The laboratory was a massive enterprise, with hundreds of employees working in a factorylike setting. Pavlov demonstrated that animals can be conditioned to salivate in response to a stimulus other than food.

After the **Classical Conditioning** paradigm was developed, Pavlov assigned research scientists to explore its possible variations. Two women scientists were assigned the task of investigating disruptions in the conditioned response. In this set of experiments, dogs were conditioned to respond (salivate) to a circle that had been paired with food, but to not respond when an ellipse was presented (the ellipse was not paired with food). Once conditioning was established, then the ellipse was altered to look more and more like a circle in successive conditioning trials. At first, the dogs could discriminate between the two stimuli and would only salivate when the circle was presented. As the ellipse was altered and discrimination became more and more difficult, the dogs became visibly upset, barked repeatedly, and acted aggressively. Pavlov believed that these results had implications for human mental disorders.

Two Americans, W. H. Gantt of Johns Hopkins University and H. S. Liddell of Cornell University, took up the study of what was by then called experimental neurosis. The same response was found in a number of species, including goats, sheep, pigs, rabbits, and cats. Both Gantt and Liddell wrote extensively about the implications of the results for human mental disorders. The field of **Psychosomatic Medicine** was then just beginning, and many thought it possible to connect psychoanalytic theory and experimental neurosis research to explain psychosomatic disorders. Out of this pioneering research, the research field known as experimental psychopathology emerged. One of its major findings was

the theory of **Learned Helplessness**.

SEE ALSO Classical Conditioning (1903), Learned Helplessness (1975)



H. S. Liddell induced experimental neurosis in a variety of species. In this image, he is working with a goat.

Eugenics and Intelligence

1912

Francis Galton (1822–1911), **Henry Goddard** (1866–1957)

Scientist Francis Galton was fascinated with the idea that eminence and ability are primarily a function of heredity. Galton was also a person who loved to measure things. The two interests converged when Galton decided to study eminent English families. Based on his study, Galton developed eugenics, by which he meant methods for improving human stock by giving "the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable." His program of positive eugenics encouraged eminent men and women to marry and produce offspring. Galton devised a series of tests that would help identify those likely to become distinguished while they were still young and able to procreate.

Galton's program of positive eugenics never came to fruition. However, a program of negative eugenics was initiated in the United States early in the twentieth century, when there were concerns about the influx of immigrants from southern and eastern Europe. These undesirables, it was thought, would dilute the racial stock that had made America great. The recently freed slaves of African descent, many of whom had moved into northern states, were thought to be an additional threat to racial purity.

Intelligence tests were one way to "prove" the inferiority of immigrants and African Americans. Perhaps the most prominent example is Henry Goddard and his book *The Kallikak Family: A Study in the Heredity of Feeble-Mindedness* (1912). The Kallikaks comprised two lines of descent from a common father. One family came from an illegitimate coupling with a low-class woman, and the result was a long line of troubled and degenerate offspring. The other, "normal" family came from his legitimate union with a woman of good stock.

Subsequently, a program of negative eugenics designed to prevent the breeding of undesirable individuals was enacted in a number of US states. Intelligence tests were often part of the assessments used to make these decisions. However, negative eugenics in the United States never reached the

depths of the Nazi program, and its excesses sparked a backlash that began in the 1920s and led to the debunking of the major eugenics claims.

SEE ALSO Psychological Tests (1890), Binet-Simon Test of Mental Levels (1905), Army Intelligence Tests and Racism (1921)

Ellis Island in the New York City harbor was, for many years, the main point of entry for immigrants to the United States. It became the first place where intelligence tests were used extensively.

Jungian Psychology

1913

Carl Gustav Jung (1875–1961)

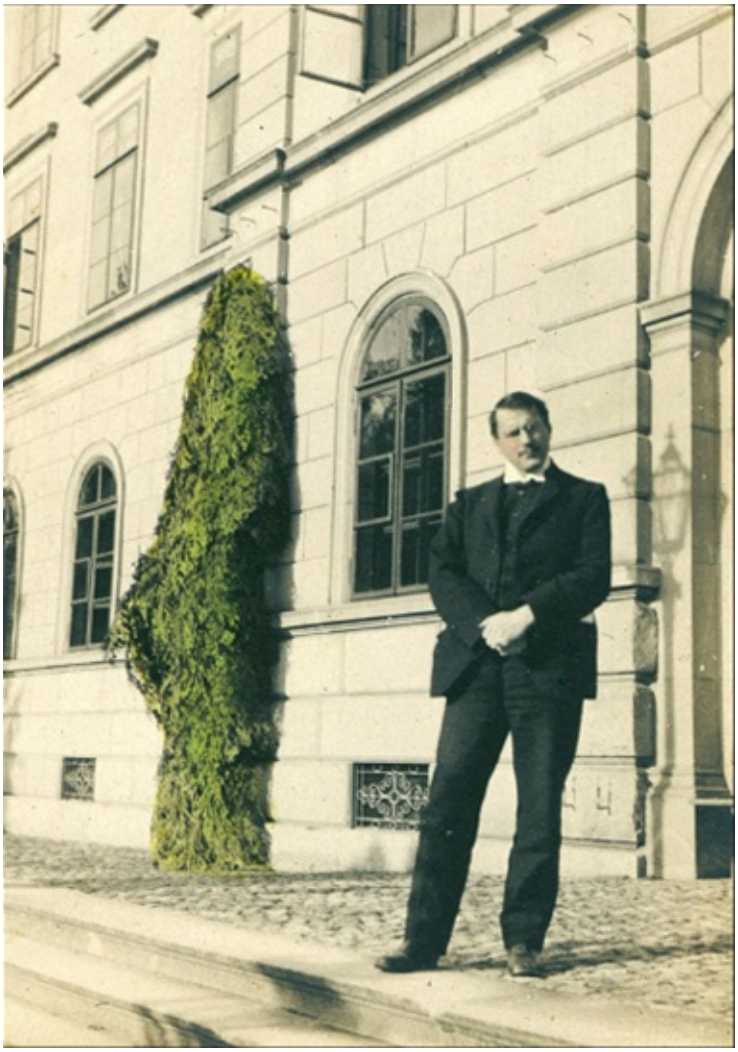
Carl Jung reported that, even as a child, he experienced himself as having two personalities, one current and one from an earlier era. A bright child and good student, Jung eventually decided on psychiatry as a career. In 1900, after earning his medical degree in Switzerland, Jung began working with Eugen Bleuler at the leading psychiatric hospital in the world, Switzerland's Burghölzli. In this period, he discovered the early writings of Freud and was invited to Vienna to meet him in 1907. They formed a friendship and even traveled together to the United States in 1909. On that trip they had an unpleasant disagreement when Freud refused to divulge a dream he had the night before, contrary to their agreement to share and analyze each other's dreams every morning. The disagreement eventually led to the unraveling of their relationship, and in 1913, Jung broke away and spent the remainder of his life developing what he called depth psychology.

Jung proposed both a personal unconscious and a collective unconscious. The latter is the repository of the psychological experience of the human race and the source of our most powerful and important ideas and feelings. Material from the collective unconscious takes the form of **Archetypes**, the basic truths of the human experience in symbolic form. These archetypes create our psychological infrastructure. For example, the mother archetype is represented by, among others, Mother Nature and the Virgin Mary. The structures of personality are also archetypes: the ego, the persona, the shadow, and so on.

The goal of our life is psychological growth, which Jung called individuation. We have an innate drive to fully realize our potential as a person; thus this is a dynamic process that unfolds over a lifetime. Naturally, there are obstacles to growth that we must face and overcome; materials we may use to aid our growth include a therapist, our dreams, and our relationships.

SEE ALSO Psychoanalysis (1899), Projective Tests (1921), Thematic Apperception Test (1935), Myers-

Briggs Type Indicator (1943)



A full-length photographic portrait of Carl Gustav Jung, standing in front of Burghölzli psychiatric hospital in Zurich, Switzerland, c. 1909.

The Lie Detector

1913

William Moulton Marston (1893–1947)

Deception is commonplace between people and by businesses. In the late nineteenth and early twentieth centuries, Western industrialized nations increasingly became consumer societies, and the problem of how to accurately detect deception became an important question. The new sciences of humanity—psychology, sociology, criminology, anthropology—were consulted for insights into how to determine the truth and its companion, the lie.

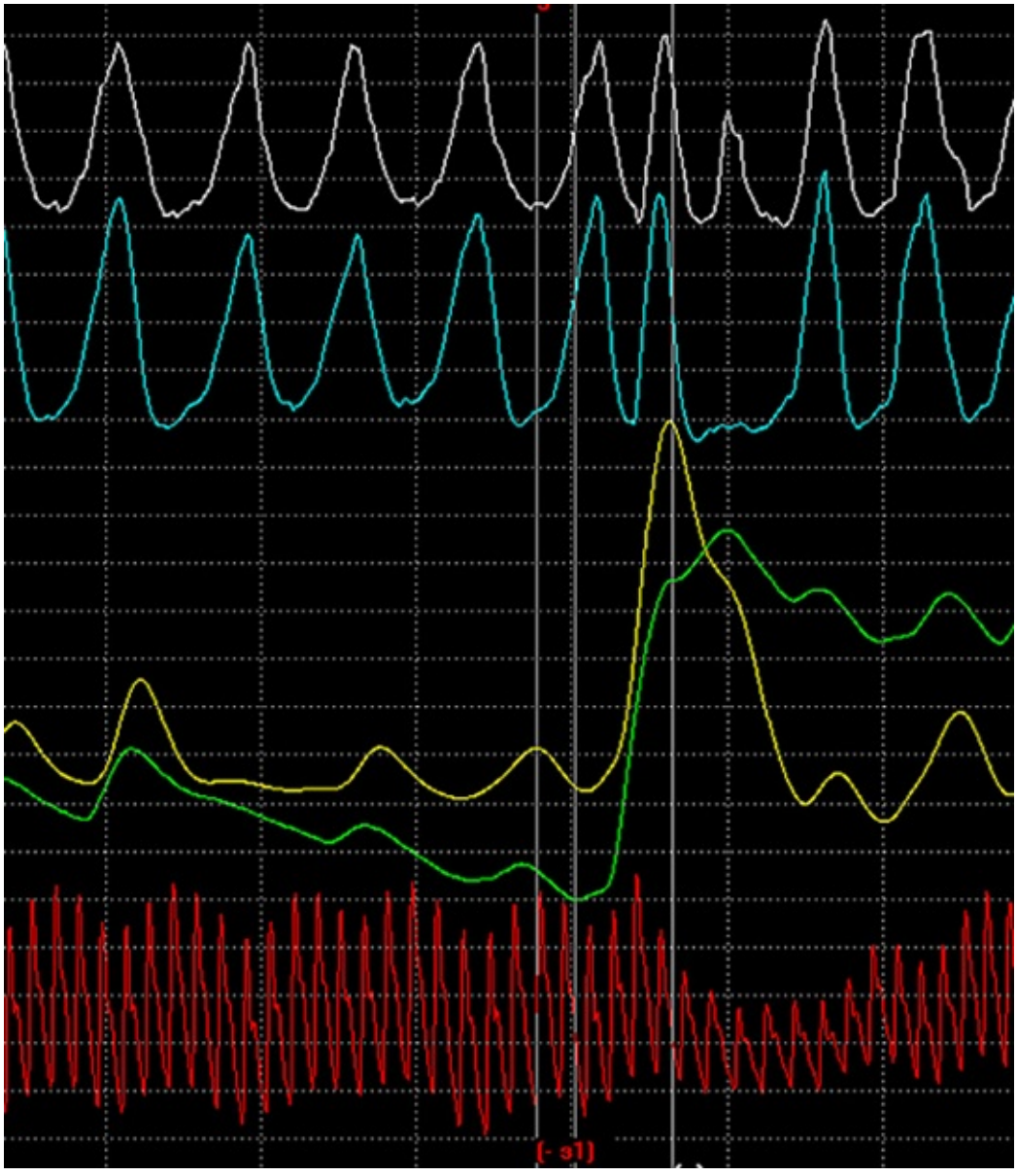
In 1895, Italian criminologist Cesare Lombroso offered a very crude and unreliable device for use by the police. In 1913, Harvard undergraduate William Marston invented a device that used changes in systolic blood pressure to indicate the likelihood of deception. In 1914, Italian psychologist Vittorio Benussi invented the pneumograph, which used changes in breathing to detect lying.

Marston went on to earn a law degree and a doctorate in psychology after World War I. As the first professor of the psychology of law in the United States, Marston pursued research on emotionality and deception at American University in Washington, D.C. He billed himself as the father of the lie detector, but in 1921, John Larson of the University of California combined Marston's use of changes in systolic blood pressure with his own idea of measuring changes in the galvanic skin response to create a more reliable instrument. One of Larson's protégés later invented a portable lie detector.

The Larson lie detector was the first to be used widely in police work, although it was not universally trusted. The common strategy used by law enforcement for many years was the "third degree," the brutal face-to-face confrontation of a suspect in the hopes of a breakdown and confession, but courts became unsympathetic to this approach. In contrast, the lie detector offered hope of a scientific counterweight to deception. In the United States, each state has its own laws about the admissibility of polygraph evidence, while in federal courts it is up to the judge whether it is admissible.

There is a curious footnote to the lie detector. William Marston later created the comic book character Wonder Woman, whose golden lasso of truth was the equivalent of a lie detector.

SEE ALSO Psychology of Testimony (1902), Mininformation Effect (1994)



Polygraph tests measure changes in systolic blood pressure and the galvanic skin response in order to indicate the likelihood of deception.

Behaviorism

1913

John Broadus Watson (1878–1958)

In 1913, American psychologist John Broadus Watson published an article entitled “Psychology as the Behaviorist Views It” that later became known as the behaviorist manifesto. Although Watson was certainly not the first to write about behaviorism, his statement was one of the most forceful and polemic that had yet appeared about a position that would become dominant in American psychology for the next several decades.

As Watson put it, behaviorism rejected the science of mental life for the science of observable behavior. The goal of behaviorism was the prediction and control of behavior, and the study of animal behavior was as legitimate in this regard as the study of humans. In fact, much of the academic research that followed in the behaviorist tradition was conducted with animals such as the white rat, which was often placed in elaborate contraptions such as specially designed mazes or boxes. One of Watson’s main concerns was that psychologists should study only observables. Although he did not deny consciousness, he nonetheless relegated it to the status of an unobservable that could not be studied using scientific methods. For this reason, his brand of behaviorism is sometimes referred to as methodological behaviorism. Subsequent generations of psychologists developed their own forms, such as purposive, contextual, and radical behaviorism.

The ascendance of behaviorism in American academic psychology during the first half of the twentieth century has been interpreted as a turn away from the introspective tradition that had characterized the early experimental approaches emanating from Europe. It was a move toward a more practical, outward-oriented approach that fit well with the American emphasis on adaptation, function, and the key role of the environment in shaping behavior.

SEE ALSO *Rattus norvegicus* var. *albinus* (1929), Operant Chamber (1930), Teaching Machine (1954), Token Economy (1961)

Watson pioneered the pairing of attractive people and products with his behavioral principles of classical conditioning.

Variability Hypothesis

1914

Leta Stetter Hollingworth (1886–1939)

A commonly held belief originating early in the nineteeenth century, the variability hypothesis states that men exhibit greater variability than women across both mental and physical traits. For example, it was commonly believed throughout the nineteenth and early twentieth centuries that men varied more than women in their intellectual ability, thus occupying more of both the upper and lower ends of the intelligence spectrum. Since women were less variable, they were also doomed to mediocrity; only men could attain genius. Charles Darwin's theory of evolution by natural selection buttressed this conviction in male superiority. Since evolutionary progress was dependent on a healthy pool of genetic variability, the greater variability of the males of the species was seen as desirable. Although empirically unsupported, this belief was used by many social scientists to justify educational and occupational restrictions for women. The variability hypothesis was not seriously challenged until the work of psychologist Leta Stetter Hollingworth, who in 1914 published an extensive review of the literature that debunked the notion of greater variability in males.

Hollingworth carried out a large-scale study of one thousand male and one thousand female infants at the New York Infirmary for Women and Children. She found that while males were slightly larger physically than females, anatomical variability actually favored the females. She also conducted a systematic review of the literature and found no evidence to support the hypothesis for female intellectual inferiority. Finally, she reasoned that even if the scores of males were more variable than those of females on tests of mental traits, this alone would not prove that greater variability was innate, since men and women experienced entirely different environments and social expectations. Although Hollingworth's research led to a rejection of the variability hypothesis, the idea occasionally receives attention from research psychologists to this day.

SEE ALSO *On the Origin of Species* (1859), Sex Roles (1944)

"Where there's smoke there's fire," a 1920s illustration by American artist Russell Patterson (1893–1977) of a fashionably dressed flapper—a "new breed" of woman who flouted social and sexual norms during the Roaring Twenties.

Shell Shock

1915

C. S. Myers (1873–1946)

Military efforts to deal with psychological problems caused by warfare have had little success either in understanding their causes or in finding effective treatments. In World War I, for what was variously called “shell shock” or “soldier’s heart,” both sides discounted the large number of psychiatric casualties and offered eugenic explanations—i.e., the men broke down because they were of inferior stock. The war was particularly savage, with millions killed by shelling, poisonous gases, and bombs. Unknown numbers of men were killed by machine-gun fire when they were senselessly ordered to charge enemy lines over muddy, obstacle-filled terrain. After even the first few months of the war, young men in the prime of life began showing up at combat treatment tents with strange symptoms; some reported that they could not see, hear, or speak. Some of the men could not walk normally, or at all. Yet physical examination revealed no neurological damage.

In 1915, the British psychologist C. S. Myers termed these reactions *shell shock*, and by war’s end more than eighty thousand British soldiers suffered from it. Myers thought that the symptoms might be caused by the concussive impact of exploding shells; however, many of the soldiers developed shell shock without ever going into battle. The symptoms displayed in shell shock resembled the symptoms of **Hysteria**. Some of the shell-shocked soldiers were court-martialed and shot; some were forced back into battle, where they were unable to function, and many were sent home for hospitalization. In England, the anthropologist-psychologist-physician W. H. R. Rivers was among the first to try Freud’s talk therapy with these victims. To his surprise, the rate of successful treatment was much greater than with any other treatment in use by the military at that time. His successful use of talk therapy prepared the way for the rapid growth of **Psychoanalysis** in Britain after the war.

SEE ALSO Hysteria (1886), Torres Straits Expedition (1898), Psychoanalysis (1899), Post-Traumatic

Stress Disorder (1980)

British Soldiers occupy a German trench at Ovillers-la-Boisselle during the Battle of the Somme, July 1916.

Modern Psychology in India

1915

Girindrasekhar Bose (1887–1953)

As early as the mid-nineteenth century in India, there was interest in psychology as understood in the European sense. The prominent Indian scientist Mahendra Lal Sircar argued that psychology was important in understanding both the objective and subjective aspects of human mentality.

Psychology as an academic discipline was institutionalized in India early in the twentieth century, as indicated by the establishment of the country's first psychological laboratory in 1915 at Calcutta University. Within twenty years, psychology was taught in at least one hundred Indian academic institutions. According to Indian scholars, much of the psychological science in India was derivative of Western psychology in the period between the world wars and for a period after its independence from Great Britain in 1947. On the other hand, **Psychoanalysis** in India developed in a way that expressed the richness of Indian cultural life.

The pioneer of psychoanalysis in India, Girindrasekhar Bose, transformed psychoanalysis to reflect the reality of Hindu family life and customs, with its emphasis on the mother-son relationship. Bose argued that the most important relationship for psychological development was that of mother and son rather than father and son, as in Freudian theory. Bose proposed that a child wishes to be both male and female; there is not the strong identification with the opposite-sex parent that is the basis for Freud's **Oedipus Complex**. It is, in Bose's view, the contending and opposite wishes that create the need for repression in childhood, the resolution of which holds the promise of healthy personality development. In this way, Indian psychoanalysis became a model for efforts since the 1970s to make Indian psychology reflective of Indian life and relationships.

After World War II, Durganand Sinha did for academic psychology what Bose had done for psychoanalysis. Sinha argued that Indian identity is primarily relational, and in order to be effective, psychology must originate from this

basic, taken-for-granted truth of Indian life.

SEE ALSO Buddha's Four Noble Truths (528 BCE), Bhagavad Gita (c. 200 BCE)

Tomb of the Mughal emperor Humayun (1508–1556) at dusk, Delhi, India. The country's first psychological laboratory was established at the University of Calcutta in 1915.

American Classification of Mental Disorders (DSM)

1918

The first official American classification of mental disorders appeared in 1918 as the *Statistical Manual for the Use of Institutions for the Insane.* It was developed in response to demand from the US Census Bureau, which needed to count the number of insane people in institutions. The manual appeared in several editions, most of them focused almost entirely on the psychoses. By the tenth edition (1942), various other psychoneuroses, including anxiety states, were described. The US Army also developed a manual for diagnosing mental disorders.

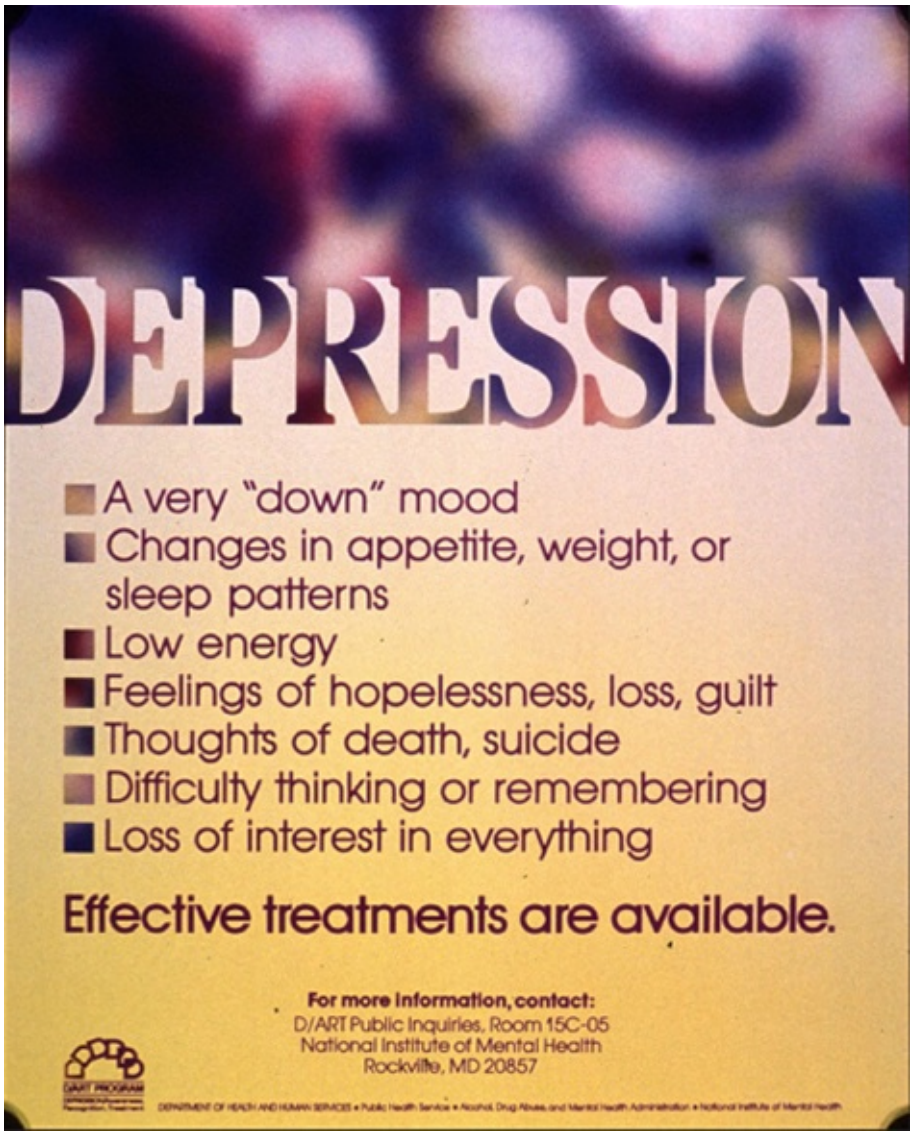
The first version of the manual now in common use, *The Diagnostic and Statistical Manual of Mental Disorders,* or DSM, was published in 1952 by the **American Psychiatric Association**. It drew upon the earlier classification manuals and was particularly reflective of the psychoanalytically oriented perspective of psychiatrists who had served in the war. As in the earlier publications, serious mental illnesses, such as **The Schizophrenias** and bipolar disorder, dominated the manual. Psychoanalytic constructs of neuroses were threaded throughout. For the time period, this made sense, as most practitioners did not place primary emphasis on diagnostic purity.

The second edition of the DSM was published in 1968 and followed much the same plan. Now, however, there were more subdivisions of the major disorders; for example, whereas DSM-I simply listed alcoholism, DSM-II listed the additional categories of episodic excessive drinking and habitual excessive drinking.

The most dramatic change to the DSM came with the seventh printing of the second edition, published in 1974. When the American Psychiatric Association held their convention in San Francicso, California, in 1970, gay activists disrupted the conference and demanded that homosexuality no longer be listed as a mental disorder. After much internal debate and conflict, the association finally agreed and changed the manual to describe homosexuality as a sexual-

orientation disturbance beginning with the next printing.

SEE ALSO DSM-III (1980)


DEPRESSION
A very "down" mood
Changes in appetite, weight, or sleep patterns
Low energy
Feelings of hopelessness, loss, guilt
Thoughts of death, suicide
Difficulty thinking or remembering
Loss of interest in everything
Effective treatments are available.
For more information, contact:
D/ART Public Inquiries, Room 15C-05
National Institute of Mental Health
Rockville, MD 20857

This 1980s poster from the National Institute for Mental Health uses a cluster of symptoms to describe or "classify" depression, much like the Diagnostic Manual of Mental Disorders *(DSM).*

Army Intelligence Tests and Racism

1921

Robert Yerkes (1876–1956)

Beginning in the nineteenth century, new theories were deployed to argue that some races were more evolved than others. In the early twentieth century, a new tool—the intelligence test—emerged, and though sorting races was not its creator's intent, it soon was used to "prove" that some groups were intellectually superior. This was also the time when the word *race* became more directly associated with skin color rather than place of origin.

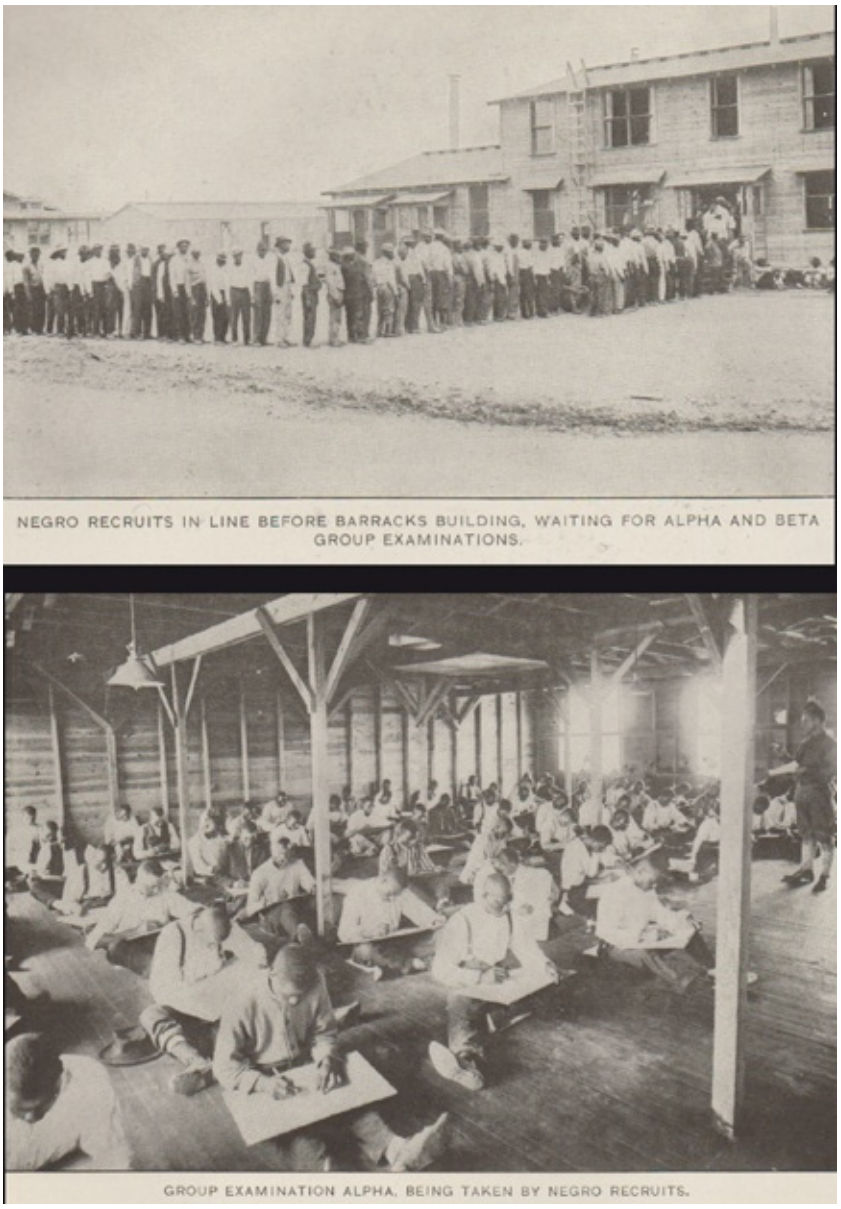
One prominent example of scientific racism was the large intelligence testing program for the US Army in World War I, in which psychologists tested nearly two million soldiers. According to psychologist Robert Yerkes, leader of the testing effort, the most intelligent soldiers were those of northern European or Anglo-Saxon descent, while recent immigrants or their offspring from Italy, Greece, or eastern Europe were not as smart.

The army psychologists extended their interpretation of the results to indicate that African Americans were the least intelligent, with scores on average equivalent to an eleven-year-old's. Psychologists went further with the African American results by checking scores based on skin color to determine if being of partial European descent made a difference in scores. Those African Americans with the lightest skin color had the highest scores. Here is an excerpt from the official 1921 report (page 531): "Two battalions were classified as lighter or darker on the basis of offhand inspection. Two other battalions were classified as black, brown, and yellow on the basis of skin color. The median score of the 'black' Negroes was 39, that of the 'yellow' was 59; while that of the 'brown' Negroes fell between these values."

These were the beliefs of the dominant social group; but within a few years a new cohort of African American psychologists and educators would successfully challenge these results. Beginning in the 1920s with the work of both African American and Latino/a psychologists, as well as the work of such psychologists as Otto Klineberg and Thomas Russell Garth, the notion of intellectual racial

superiority was shown to be without basis.

SEE ALSO Psychological Tests (1890), Eugenics and Intelligence (1912)


NEGRO RECRUITS IN LINE BEFORE BARRACKS BUILDING, WAITING FOR ALPHA AND BETA GROUP EXAMINATIONS.
GROUP EXAMINATION ALPHA, BEING TAKEN BY NEGRO RECRUITS.

US Army conducting group intelligence testing of African American World War I recruits. Report to the Surgeon General, National Academy of Sciences, 1921.

Projective Tests (Rorschach Inkblots)

1921

Hermann Rorschach (1884–1922)

A new kind of psychological test dominated the period from the early 1920s until the 1960s. So-called projective tests were developed in the hopes of eliciting unconscious material from patients. Sigmund Freud had theorized that psychologically relevant material was often suppressed because it contained wishes and impulses that were socially unacceptable, yet it was just this material that held the key to unlocking the psyche and bringing relief. A projective test uses ambiguous stimuli in the form of images, words, or objects to which the client is asked to respond. For example, a patient may be asked to complete this sentence stem: "When I was a child my father …" No diagnosis or therapy was offered on the basis of one response, but when numerous such ambiguous stimuli are presented, a person's psychological issues emerge in the pattern of responses.

The first formal projective test is the eponymously named Rorschach Projective Technique, first published in 1921. Swiss psychiatrist Hermann Rorschach, nicknamed Inkblot as a child, was influenced by both Freud and Carl Jung and used his childhood fascination with inkblots to create a test to use with mental patients. It was brought to the United States in the 1920s and quickly became the most widely used assessment tool in psychiatric settings. New projective tests soon emerged, such as the **Thematic Apperception Test (TAT)**, the Dramatic Productions Test, and the Szondi, the Blacky, and the Lowenfeld Mosaic tests, to name only a few of hundreds. All of these tests assumed that the most important determinants of behavior had their origins in the unconscious. As TAT codeveloper Henry Murray was fond of saying, "Every man knows something about himself which he is willing to tell; he knows something about himself that he is not willing to tell; and there is something about himself that he doesn't know and can't tell."

SEE ALSO Psychoanalysis (1899), Thematic Apperception Test (1935), Minnesota Multiphasic

Personality Inventory (1940)

The Rorschach Projective Technique, first published in 1921, used ambiguous inkblots to uncover hidden psychological issues in mental patients and quickly became the most widely used psychiatric assessment tool in the United States.

Neurotransmission

1921

Otto Loewi (1873–1961)

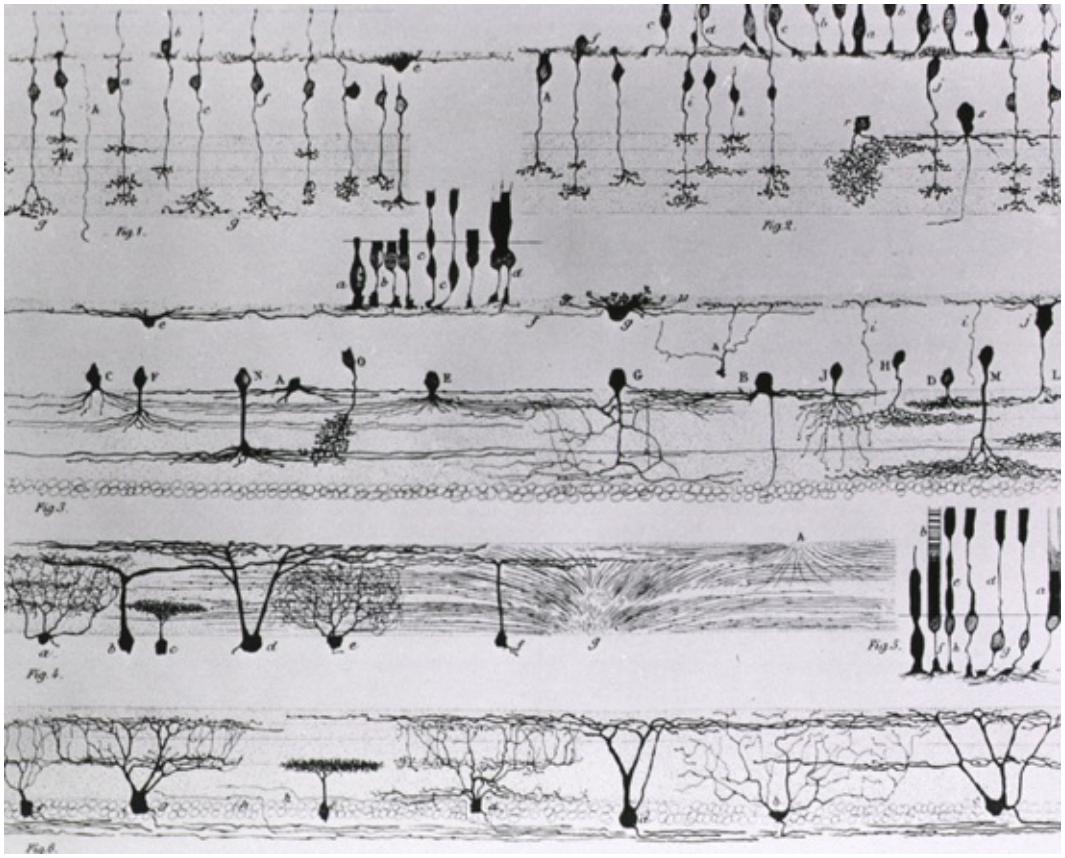
In the late nineteenth century, neuroanatomists discovered that brain cells, or neurons, are independent units and not directly connected to each other. Physiologist C. S. Sherrington discovered a gap between neurons, which he called the synapse. But how do neurons communicate across the synapse? Some thought that there was an electrical current that ran between them, but the real answer came from a dream.

In 1921, German pharmacologist Otto Loewi dreamed how brain cells might communicate by releasing chemicals. He managed to write down what he had fantasized, but he could not read his handwriting when he awoke the next morning. Fortunately, he had a similar dream a second time and was able to remember it. To test the idea he had in his dream, he used the hearts of two frogs with the vagus nerve still attached. Loewi electrically stimulated one of the hearts and collected the fluid running through it. He then used that fluid to stimulate the second heart. He surmised that it was a chemical in the fluid that caused the effect; this chemical turned out to be acetylcholine, the first neurotransmitter ever discovered.

We now know that there are more than one hundred neurotransmitters in the brain, which are synthesized and stored in the presynaptic end of the neuron. When the neuron is stimulated, the neurotransmitters are released into the synapse and bring their chemical message to another neuron that has receptors specifically for that neurotransmitter. With the brain’s one hundred billion–plus neurons, it is easy to imagine that billions of these messages are transmitted and received at any moment.

Each neurotransmitter has its own functions. Serotonin, for example, is one of the key neurotransmitters involved in sleeping, mood, and arousal level. It is best to keep in mind that none of these chemicals acts alone; the brain and its chemicals are more like a symphony than a violin solo.

SEE ALSO Psychical Discharges (1941), Split-Brain Studies (1962), Mirror Neurons (1992)



Spanish neuroanatomist Santiago Ramón y Cajal's careful laboratory work and artful illustrations of nerves encouraged scientists rethink how nerves communicate with each other.

Feminine Psychology

1922

Karen Horney (1885–1952)

Karen Danielsen Horney experienced significant personal and professional setbacks in life, yet she offered important insights into how we can deal with our anxieties. Her work on psychology from a feminine perspective was among the first to challenge Sigmund Freud's ideas about the inadequacy of women's psychological development. She published a series of articles on female psychology from 1922 to 1937; these papers were later collected and published as *Feminine Psychology* in 1967.

Horney grew up in Hamburg, Germany, in a home whose dynamics shaped her career. Both parents favored her brother, who was abusive toward Karen. She was not encouraged to pursue her dream to become a physician. After medical school, Karen trained as a psychoanalyst and worked in Berlin until 1932, when she moved to Chicago. Two years later, she moved to New York, where she founded her own institute and journal.

Early in her professional practice she grew dissatisfied with some aspects of Freudian theory, particularly Freud's contention that it was impossible for women to experience full psychological development, which led them to envy male development as symbolized by the penis. She argued that what hindered women psychologically was not some fundamental flaw in their physical makeup but the social constraints placed on them. Because of these constraints, both healthy and neurotic women tended to overvalue love because of their economic and social dependence on men.

The themes of intimate and familial relationships continued to figure prominently in Horney's writing. She wrote that in many families, children develop a basic anxiety because they feel unsafe, unvalued, and unloved. In response they try to reduce anxiety by developing ways to defend themselves either through love, power, or detachment. Healthy adults demonstrate a flexible use of these three strategies, but too often, one or more of the strategies becomes exaggerated. Those who exaggerate love may become compliant, seeking to

counter anxiety by pursuing approval and making themselves overly dependent on others. This, Horney argued, was especially problematic for women and hindered their psychological development.

SEE ALSO Psychoanalysis (1899), Cultural Relativism (1928), Humanistic Psychology (1961)

An image of Karen Horney from the American Journal of Psychotherapy, *Volume 5, 1951.*

In this 1901 illustration from Danish magazine The Raven, *the lawyer says to his psychologically hindered spouse, "Rejoice, little wife, now you get the new hat that you have so long wished for—and a fur coat, you also get!"*

Capgras Syndrome

1923

Joseph Capgras (1873–1950)

Capgras syndrome is an unusual brain disorder in which sufferers become convinced that the people in their lives are not who they appear to be. In one bizarre case, a man, convinced that a robot had replaced his father, decapitated him in order to locate the batteries and recover the microfilms he knew were inside. A person with Capgras syndrome will insist that there are subtle differences between a real friend or family member and the supposed impostor. Since others do not detect these (imagined) differences, it confuses the Capgras patient and may lead to paranoid suspicions about why no one else will acknowledge the substitution—thus the unfortunate outcome described above.

After the syndrome was first described, by the French psychiatrist Joseph Capgras in 1923, the most common explanations for it were often psychoanalytic, such as repressed anger or sexual desire toward the "double"; often, the patient was thought to be schizophrenic. However, the Capgras sufferer is not delusional; rather, something has happened in the way information about other people is processed in the brain.

Recent research suggests that Capgras syndrome results from a disconnect between the parts of the brain that help us recognize others. One brain system, thought to be in the prefrontal cortex, deals with factual knowledge—"your features are precisely the same as my wife's"—while another part of the brain, the limbic system, provides emotional information—"you look like my wife, but I do not have a warm emotional feeling toward you."

The disorder underlines the important connection between our thoughts and our emotions. Many times we can acknowledge what the facts are in a situation, but our emotional evaluation of those facts may lead us to a different conclusion from the one the facts alone would suggest.

SEE ALSO Munchausen's Syndrome (1838), The Case of H. M. (1953), Universal Expression of Emotions (1971)

Detail from The Legend of St. Stephen *by Italian painter Martino di Bartolomeo, early fifteenth century, showing the devil exchanging the newborn saint with a changeling. Legends of changelings in European folklore likely emerged in order to explain babies born with deformities or developmental abnormalities who were often abused or murdered by the superstitious.*

Cheaper by the Dozen

1924

Lillian Gilbreth (1878–1972)

Early in the twentieth century, psychologists became involved in efforts to make work more efficient. Lillian Moller Gilbreth made several important contributions to these efforts, both in the business and the domestic spheres, all while raising twelve children! Originally from California, Lillian married engineer Frank Gilbreth in 1904, and together they were leaders in the new field of industrial psychology, or business psychology. They were the first to use the new motion-picture technology to study worker efficiency, and they invented the Gilbreth clock, which measures fractions of a second, in order to accurately time their subjects at work.

Lillian became the vice president of Gilbreth Consulting and was fully involved in the business. The ideology of the time was to find ways to make the worker conform to the job, but Lillian was dissatisfied with this approach, believing it neglected important psychological and motivational factors. She returned to school and earned her doctorate in psychology in 1914.

Using Lillian's new psychologically oriented methods, the Gilbreths operated one of America's most successful consulting firms. After Frank died suddenly in 1924, Lillian's career took off. She continued their successful work, becoming a world-renowned leader in industrial psychology. In the United States, she served on national commissions on such topics as reducing unemployment and involving more women in the workforce.

Throughout her career, Lillian showed a consistent concern for the worker, whether in the factory or in the home. She invented the type of garbage can on which the lid can be released by stepping on a lever, a design that continues to be popular around the world. She improved the design of the home kitchen to make it more efficient, and designed an innovative kitchen for people who are disabled. Two of her children wrote the popular book *Cheaper by the Dozen*, which was made into a commercially successful movie (1950). She is the only female psychologist to ever be honored with a postage stamp by the US Postal

Service (1984).

SEE ALSO Psychotechnics (1903)

Two Scandinavian waste containers that allow the can lid to open by stepping on a lever—an invention of industrial psychologist Lillian Gilbreth, who improved the efficiency of the home kitchen.

Brain Imaging

1924

Hans Berger (1873–1941)

One of the greatest advances in neuroscience and psychology has been the development since the 1950s of increasingly refined brain imaging technologies. Through the intelligent use of these techniques, scientists now know more about the links between brain and behavior than ever before.

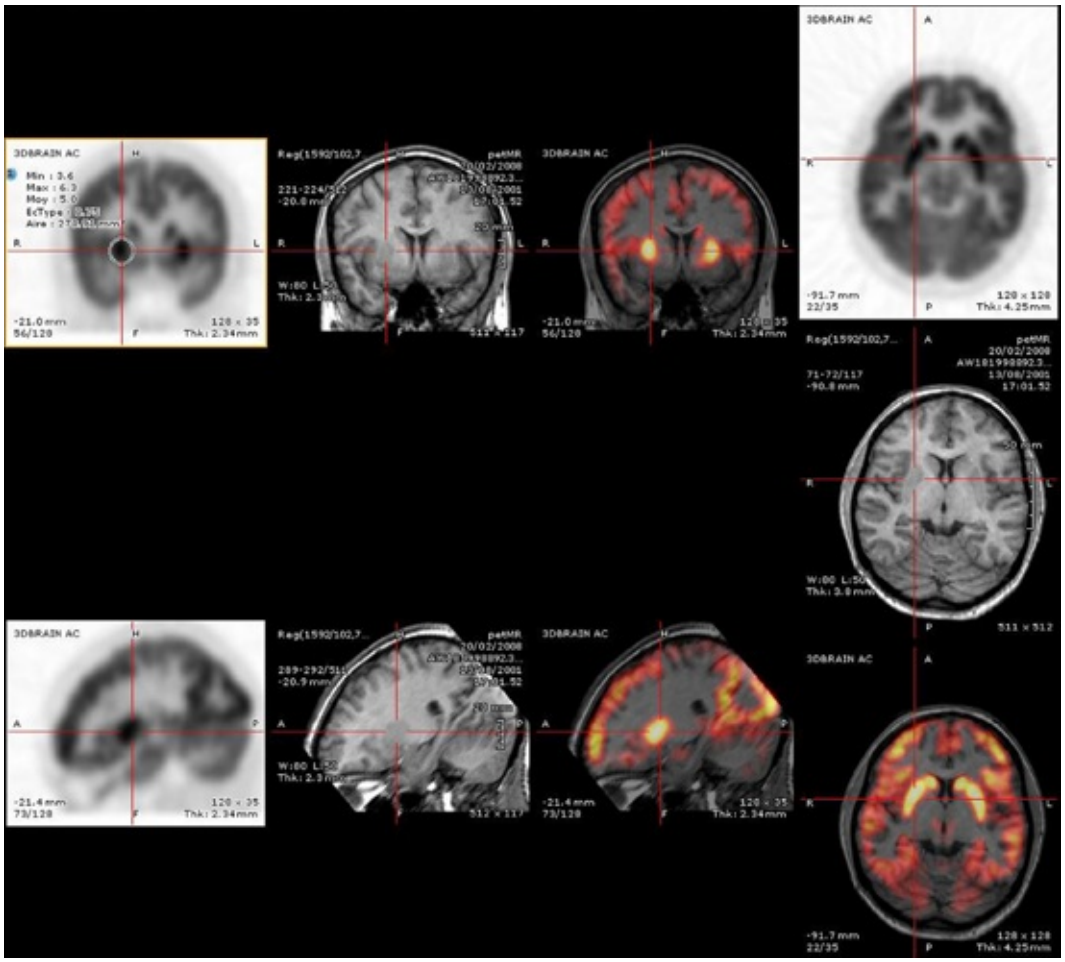
Hans Berger invented the electroencephalogram (EEG) in 1924, and it became widely used to measure activity in the human brain. It remains a useful tool for telling scientists when, but not where, activity takes place. Then, in 1963, the computed tomography (CT) scan was patented. Computerized axial tomography (CAT) uses a series of X-ray "slices," or pictures, to reconstruct a detailed image of a part of the brain. It has been very useful as a diagnostic tool in locating tumors and abnormalities.

In 1972, after almost two decades of research, medical practitioner Raymond Damadian patented the first magnetic resonance imaging (MRI) machine, which he envisioned as a tool for detecting cancerous cells. The technology has continued to be refined, and today an MRI detects changes in the alignment of the nuclei of brain cells when a radio wave is passed through the brain. The results are analyzed by a computer, which then constructs a 3-D image that shows healthy and diseased tissue, as well as blood clots and other pathologies.

Brain activity can be detected by a positron emission tomography (PET) scan, which tracks injected radioactive glucose as it is used in the brain. The brain cells that are most active will show the greatest use of the glucose.

The most powerful technique now in use is the functional MRI (fMRI), which tracks the use of oxygen in the blood. When neurons are active, they use more oxygen, thus activity in any one part of the brain can be tracked as it happens. Neuroscientists now rely extensively on fMRI images to study almost every facet of human brain functioning.

SEE ALSO Neurotransmission (1921), Split-Brain Studies (1962)



PET/MRI hybrid images of the brain identify diseased brain tissue, in addition to tracking neuronal activity.

Somatotypes

1925

Ernst Kretschmer (1888–1964), **William H. Sheldon** (1898–1977)

The belief that body type, or somatotype, is linked to character or personality and life outcomes is ancient. The *doshas* of Ayurvedic medicine, dating from at least five thousand years ago, represent one version of this belief, but theories and practices based on the belief diminished in Western societies with the ascent of modern science. However, in the nineteenth century, Cesare Lombroso revived the idea in application to criminal types, and by the early years of the twentieth century, some physicians and psychologists developed new variants of the theory and sought to apply it in new ways.

After the defeat of Germany in World War I, many of that nation's elite blamed technology and mechanistic science for Germany's problems and sought holistic or organismic alternatives in medicine and psychology. Psychiatrist Ernst Kretschmer developed a somatotype approach to mental and physical health that linked inherited personality types (e.g., schizothymic and cyclothymic) with three body types: stocky, thin, and athletic. His book describing the theory was published in English as *Physique and Character* (1925).

In the United States, physician George Draper at New York's Columbia-Presbyterian Hospital used a constitutional, body-type approach in his research on the role of psychological factors in health and disease. Draper's model included four panels of personality—morphology, physiology, psychology, and immunity—that together "determine the individual's reaction, successful or unsuccessful, to the stress of environment."

William H. Sheldon, with degrees in both medicine and psychology, developed what is probably the best-known theory relating body type and personality. He proposed three main body types, each with unique personality characteristics. The *endomorph* is stocky, with an extroverted personality; the *mesomorph* is also an extrovert, but with an athletic, muscular build; and the *ectomorph* is thin, often tall, introverted, inhibited, and artistic. Although

somatotype theories have fallen out of favor among scientists, there still remain expressions of this belief in popular culture, such as the stereotype of the jolly fat person.

SEE ALSO Palmistry (c. 5000 BCE), Physiognomy (1775)

This December 1794 caricature by James Gillray satirizes the incipient neo-Classical trend in women's clothing styles toward "short-bodied" or high-wasted gowns, showing women with two very different somatotypes wearing the same fashion.

Genetic Epistemology

1926

Jean Piaget (1896–1980)

Although he was not a psychologist by education or training, the Swiss biologist and philosopher Jean Piaget had a profound effect on our understanding of how human beings develop the ability to think and reason. Piaget was a child prodigy in science, publishing his first scientific paper—a study of mollusks—when he was only eleven. He began his research on children's thinking during the 1920s, but it was not widely known in North America until the 1950s, by which time he had published all his major studies. Piaget's work was crucially important in turning psychology in the United States toward a study of internal, cognitive activity.

Piaget believed that scientific reasoning was the highest expression of human cognition, and his primary research interest was determining how reasoning develops. To understand this, he began a long-term project that eventually involved scores of scientists and hundreds of children and investigated how and when children acquire cognitive abilities. He found that children's reasoning progresses quantitatively: as they grow, they can do more problems faster than they could before. Surprisingly, it also develops in qualitatively different stages. He posited four fixed stages through which a child passes: sensorimotor stage, preoperational stage, concrete operations, and formal operations. In each stage, the way children approach and solve problems differs. It is only in the final stage that formal, scientific reasoning develops, which involves the ability to grasp problems abstractly, and he found that not every child develops this ability.

According to Piaget, this developmental pattern reflects both biology and the child's practical experience in the world, a process he called epigenesis. Piaget called this large project genetic epistemology and suggested that it offers a complete theory of knowledge acquisition. Further research has validated many of Piaget's concepts, even though there are important cultural differences in how children's cognition develops.

SEE ALSO Adolescence (1904), Cybernetics (1943), Center for Cognitive Studies (1960)

A photograph of school children in the remote Pribilof Islands, off the coast of Alaska, from the US Fish and Wildlife Service. According to Swiss biologist and philosopher Jean Piaget, a child's cognitive development pattern reflects genetics as well as practical experience.

Growth Studies

1927

Harold E. Jones (1894–1960), **Jean W. Macfarlane** (1894–1989), **Mary Cover Jones** (1896–1987), **Nancy Bayley** (1899–1994)

During the period between the two world wars, many scientists and philanthropies sought to apply their science to improving society. One issue that drew the interest of philanthropies was child development. With funding from foundations, child-research institutes were established at several universities across North America. Of great importance were the studies begun in 1927 at the Institute for Human Development at the University of California, Berkeley.

The Guidance Study, led by psychologist Jean W. Macfarlane, examined the impact of parental guidance on child outcomes, such as performance in school. In the study's experimental group, there was explicit direction from parent to child around issues related to school and relationships, while in the control group, there was no particular emphasis on parental guidance. The intent was to understand how such guidance may affect personality development.

The Berkeley Growth Study, directed by psychologist Nancy Bayley, followed seventy-four individuals from infancy to adulthood over a period of forty years, examining mental and physical development. Based on these studies, Bayley developed the widely used assessment instrument known as the Bayley Scales of Infant Development, which are still used to find correlations between physical and psychological development.

The Oakland Growth Study (originally the Adolescent Growth Study) was headed by physician Harold Jones and his psychologist wife, Mary Cover Jones. The study began in 1931 and followed adolescent boys and girls well into adulthood to assess their physical and psychological development. A key finding was that boys who were slow to develop physically often also showed evidence of slower psychological maturity, but they were usually able to catch up psychologically in early adulthood.

Because each of these studies followed a cohort of children over time,

scientists had systematically gathered data drawn from naturalistic settings that shed light on childhood problems and their resolution.

SEE ALSO Baby Biographies (1877), Adolescence (1904), Seasons of Life (1978), Ecological Systems Theory (1979)

Third generation of American children of Japanese ancestry in Byron, California, awaiting the arrival of the next bus taking them to the Assembly center after the US government ordered the internment of about 120,000 Japanese Americans living on the West Coast in 1942.

Hawthorne Effect

1927

Elton Mayo (1880–1949)

The period between the two world wars marks the era when psychology became an integral part of industry. It was a time of labor unrest, and many industries relied on psychologists to help them manage their workers. The most significant study of the new industrial psychology was conducted at the Hawthorne Works in what is now Cicero, Illinois. The plant was operated by Western Electric for Bell Telephone and was perhaps the most important site for technological innovations of its time.

The Works was the site for a landmark study of personnel management, and its findings are commonly known as the Hawthorne effect. In an attempt to increase worker productivity, Western Electric began a pilot project in which illumination was increased for the test group but not for a control group. Three years later, the company asked industrial psychologist Elton Mayo to review the pilot project data, and he found that productivity had increased for both groups. Mayo concluded it was the increased attention paid to the workers that resulted in higher worker morale and productivity. It was this research that came to be labeled the Hawthorne effect.

A second phase examined the impact of workplace improvements (such as rest periods and shorter hours) for six female workers in the relay assembly test room. The women chose their coworkers and were asked for their input in the process; productivity dramatically improved and was maintained even when original work conditions were restored. Analysis of interview data indicated that the social aspect of work was central to improved productivity. Western Electric redesigned some of their manufacturing programs to incorporate worker input, a move widely emulated by other companies. The success of psychology in these applications led to the new profession of personnel consulting, out of which grew the modern field of human relations.

SEE ALSO Psychotechnics (1903), *Cheaper by the Dozen* (1924)

A poster from the Office for Emergency Management, War Production Board, c. 1942–1943, encouraging workers to provide suggestions for improving the war production effort.

Zeigarnik Effect

1927

Bluma Zeigarnik (1901–1988)

Born to a shopkeeper in a small village in what is now Lithuania when it was under Russian rule, Bluma Gernshtein was a precocious child who skipped several school grades despite a serious illness. While studying for her university entrance exam, Bluma met her future husband, Albert Zeigarnik. Like many Russian subjects of the time, she and her new husband traveled to Berlin in 1922 for graduate studies. There she became a student of the Gestalt psychologist Kurt Lewin, earning her doctoral degree in 1927 with an experimental study of recall; the results became known as the Zeigarnik effect.

In brief, Zeigarnik found that people have a tendency to remember an interrupted task better than a completed task. The research emerged from an observation Lewin made about a waiter who had a remarkable ability to remember everyone's order without writing it down. When asked after everyone paid what had been ordered, however, the waiter could not remember.

The study of completed and uncompleted tasks became Zeigarnik's dissertation topic. The participants were told to complete as many of the presented tasks as rapidly as possible. They were interrupted before they could finish half the tasks and left alone for the other half. When asked afterward to recall the tasks, adults remembered the interrupted tasks approximately 90 percent better than they remembered those that were fully completed. This lack of completion, Zeigarnik argued, created tension in the participants, which facilitated memory for the task until it was completed.

A unique feature of the research was that Zeigarnik interacted with the participants to encourage them in the tasks, in the hope of getting the best possible results from each one. This research fits within the larger context of Lewin's theory of action-wholes, which posits that in any experiment the experimenter and participant share a lifespace, thus the experimental situation is interactive and potentially collaborative.

SEE ALSO Gestalt Psychology (1912), Psychological Lifespace (1935)

A Gourmand *by French painter Henri Brispot (1846–1928). Studies conducted by psychologist Bluma Zeigarnik suggest that the waiter in this scene may not have difficulty recalling his patron's order until the check arrives at the end of the meal.*

Cultural Relativism

1928

Margaret Mead (1901–1978)

Margaret Mead was a proponent of cultural relativism, or the idea that all cultures must be understood on their own terms, with reference to local context rather than universal context. Much of her fieldwork was designed to understand cultural variations in developmental experiences such as **Adolescence**, sex roles, and attitudes toward marriage and education. Although she was an anthropologist, she utilized psychological theories to help her understand culture.

She was certainly the best-known cultural anthropologist of the twentieth century. Her books, including *Coming of Age in Samoa* (1928), *Sex and Temperament in Three Primitive Societies* (1935), and *And Keep Your Powder Dry* (1942), have become enduring classics. In her lifetime, Mead was a true public intellectual, writing and commenting on both social and scientific issues. A student of Franz Boas, who developed the field of cultural anthropology, she received her PhD from Columbia University in New York City. She and her collaborator Ruth Benedict were both members of the Culture and Personality movement that developed in the 1930s.

In *Coming of Age in Samoa,* Mead showed how individual psychological development is shaped by the demands of the local cultural context. Thus adolescents will vary in such domains as sexual development, with some cultures expecting sexual interaction at earlier ages. Her book on the Manus tribal group, *Growing Up in New Guinea* (1930), countered the older idea that so-called primitive peoples are like children. The message of both books was that human psychological and social development will vary according to culture rather than follow a consistent universal pattern. Her work was one of the first cross-cultural studies of human development.

While much of her work centered on “primitive” societies, Mead’s contribution to American culture is undeniable. She shed light on the long-standing **Nature versus Nurture** debate, popularized anthropology, and

expounded on American national character. With her controversial views on sex roles, she was also at the forefront of the US women's movement.

SEE ALSO Nature versus Nurture (1874), Torres Straits Expedition (1898), Adolescence (1904), Culture-Bound Syndromes (1904)

Margaret Mead, who came into the public eye with her study, Coming of Age in Samoa, *reads a book in this photograph by* New York World-Telegram *reporter Edward Lynch.*

Three young Samoan women preparing to make kava, a Polynesian drink with sedative and anesthetic properties that is commonly consumed during social gatherings, c 1890.

Rattus norvegicus var. *albinus* (Neobehaviorism)

1929

Clark Hull (1884–1952), **Edward Chase Tolman** (1886–1959)

The behavior under controlled laboratory conditions of the small albino rodent *Rattus norvegicus* var. *albinus* (Norway rat) became the primary object of study for mainstream American psychology between the two world wars. Using the Darwinian principle of the continuity of species, psychologists argued that nonhuman animals could be used as stand-ins for humans in studies about learning. In the laboratory, the conditions of learning could be experimentally manipulated, and the laws of learning could be discovered; the white rat became the analog of choice to realize these laws. The dominance of this approach within scientific psychology led one historian to call it the "kingdom of behavior." In 1913, psychologist John B. Watson prepared the way for the kingdom in his behaviorist manifesto: "Psychology as the behaviorist views it is a purely experimental branch of natural science. Its theoretical goal is the prediction and control of behavior."

Two psychologists who exemplified the many variants of behaviorism, pioneering an approach that came to be called neobehaviorism, were Clark Hull and Edward Chase Tolman. At Yale, where he became a professor in 1929, Hull was described as the American Pavlov, who "uses Yale sophomores instead of dogs." He adopted a conditioned reflex model from the work of Ivan Pavlov to study alcoholism, psychoses, juvenile delinquency, and bullying. His graduate students followed his lead and successfully used conditional reflex theory and **Psychoanalysis** to study human frustration and its links to aggression in such problems as labor strife and racial conflict.

On the other coast, at the University of California, Berkeley, Tolman rejected Hull's claim that learning consists of chains of conditioned reflexes. Learning, Tolman argued, can be separated from performance. The rat learns about the maze even without reinforcement, as demonstrated the moment a food reward is introduced and the rat goes to it immediately, which Tolman called latent learning. Tolman interpreted this as supportive of his theory that learning is goal

directed.

SEE ALSO Classical Conditioning (1903), Behaviorism (1913), Operant Chamber (1930), Teaching Machine (1954)

Rat from the Wistar Institute—the first to breed pure lines of animals for use in laboratory experiments. The white Norway rat quickly became the favorite of psychologists.

Operant Chamber (Skinner Box)

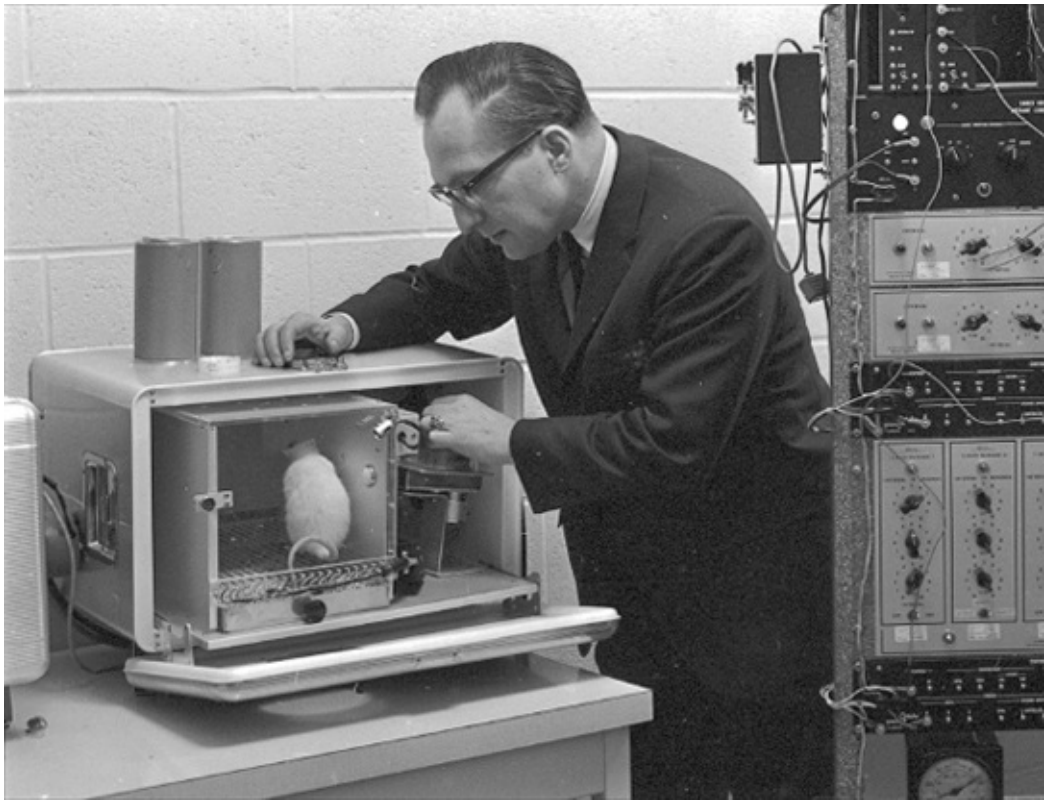
1930

B. F. Skinner (1904–1990)

B. F. Skinner made a science and a technology out of the age-old truth that living creatures, including humans, will work for rewards. He worked with rats and pigeons for many years in strictly controlled laboratory conditions to show how consequences shape behavior; he called his approach operant conditioning and his philosophy of science radical behaviorism. (The term *operant* refers to the organisms' operations on their environments to produce consequences.) Skinner demonstrated that these consequences exerted powerful effects on behavior, and he gave new meanings to words in common use, such as *reinforcement* and *punishment,* to describe these effects. Skinner was able to show that these principles reached into every corner of life.

Skinner was as much an inventor as scientist. Since childhood he had created apparatuses to perform many household tasks. Once he enrolled in graduate school at Harvard in 1928, after his self-confessed failure as a novelist, he quickly embarked on the task of devising equipment to study the phenomena he was interested in. In 1930, while studying rats' responses to food, he came up with his most famous invention—the operant chamber, popularly known as the Skinner box. Refined over the next decade or so, it was a small box with a lever that a rat could press for food, and a cumulative recorder to log the rate of lever strokes. The chamber was refined over the next few years, and once Skinner switched to pigeons, disks replaced the lever for food delivery. Skinner found that he could observe, predict, and control behavior with amazing precision. By the 1960s, Skinner's principles of operant conditioning moved out of the laboratory and into many real-life settings: they were used to discipline unruly schoolchildren, help people lose weight, control prisoners, and achieve many other practical goals.

SEE ALSO Classical Conditioning (1903), Behaviorism (1913), Teaching Machine (1954), Token Economy (1961)



The operant chamber—popularly known as the "Skinner box"—became the standard laboratory apparatus for several generations of behavioral psychologists.

Supertasters

1931

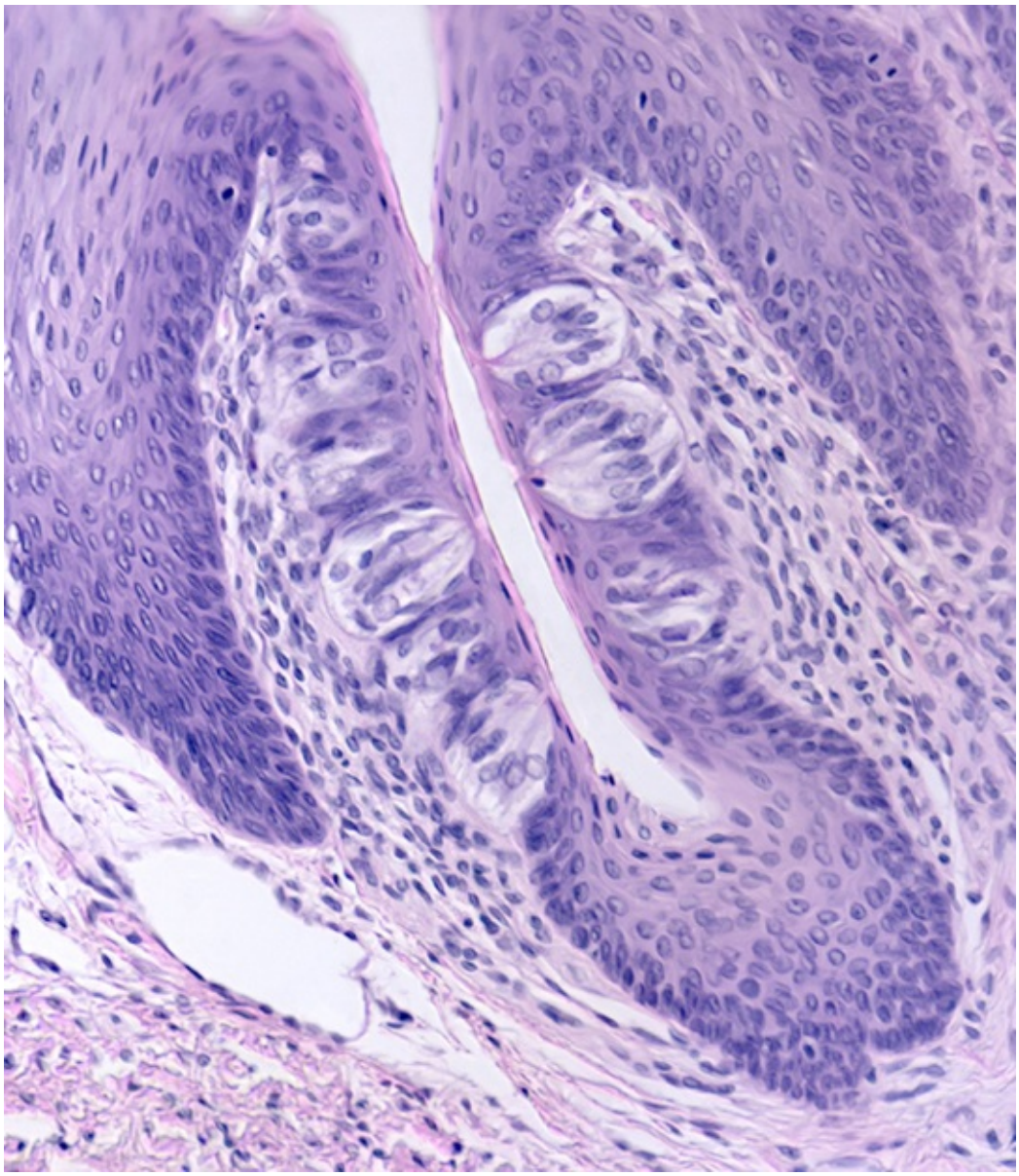
Arthur L. Fox (n.d.), **Linda Bartoshuk** (b. 1938)

Only about 25 percent of people reading this book are supertasters, while 50 percent are medium tasters and the remainder are nontasters. The scientific discovery of differences in ability to taste began quite accidentally in 1931. Arthur Fox, a chemist at DuPont, synthesized a new chemical, phenylthiocarbamide (PTC). When some of it was accidentally released into the air, one of his colleagues complained about its bitterness; Fox, however, could not taste it at all. He then passed out crystals of PTC at a scientific meeting and asked how many people could taste it. About 25 percent could not taste it, while everyone else noted that it was bitter.

While tasting research continued, it was not until the 1970s that major advances were made. Psychologist Linda Bartoshuk began developing her research on the senses of taste and smell and their implications for health. She and her colleagues developed the concept of supertasters to describe those individuals who have a very dense network of nerve endings in the tongue—up to 1,100 taste buds per square centimeter. By contrast, nontasters may have as few as eleven taste buds per square centimeter on their tongues. Bartoshuk began exploring the everyday implications of the genetics of taste. Because each taste bud delivers two messages to the brain, one about taste and the other about pain, temperature, and touch, this has implications for sensitivity. As a result of her work, Bartoshuk discovered burning mouth syndrome, which is found in many middle-aged or older women. The syndrome describes a burning sensation in the mouth even though no dental or medical cause can be determined.

While we may wish we were supertasters, it is not necessarily a gateway to greater enjoyment; for example, supertasters may find alcoholic drinks astringent, frosting too sweet, and coffee too bitter.

SEE ALSO Sensory Physiology (1867)



This photomicrograph shows an extreme close-up of taste buds on the tongue. Studies by psychologist Linda Bartoshuk indicate that supertasters may have as many as 1,100 taste buds per square centimeter of tongue, whereas nontasters may have as few as eleven taste buds per square centimeter.

Remembering and Forgetting

1932

Frederic C. Bartlett (1886–1969)

How does memory work? How do we forget? What is the structure of memory? One of the most important of the early efforts to answer this question was the work of British psychologist Frederic Bartlett, who argued that humans tend to reconstruct events rather than remember what actually happened. Thus culture and the culturally familiar are extremely important.

In his 1932 work *Remembering: A Study in Experimental and Social Psychology*, Bartlett used a naturalistic approach to study memory. Bartlett asked people to read a story and later asked them to recall it upon numerous successive occasions. The story was a Native American folktale, the "War of the Ghosts," which contained several culturally unfamiliar ideas—at least to British readers—about the supernatural. Bartlett found that when asked to recall the story, readers tended to remember only the gist of it and were unable to remember the details, let alone the words. As the subjects retold the story later, the story was reconstructed with more culturally familiar ideas about the supernatural.

Bartlett argued that recall was actually reconstruction, and reconstruction appeared to operate according to some general principles, such as rationalization, or making it more culturally familiar. According to Bartlett, these findings indicated that memory was stored as hierarchically organized, meaningful schemas (although he disliked this word, preferring "pattern" and "organized setting"). The higher levels of memory encoded the gist of the story, and this determined the details recalled at lower levels. Memory was thus active and organized, giving meaning to incoming material in a process Bartlett called effort after meaning. This work suggested that earlier memory experiments—which had used meaningless stimuli, such as nonsense syllables—were really assessing a different, and atypical, memory process.

SEE ALSO Cocktail Party Effect (1953), Levels-of-Processing Model of Memory (1972)

This photograph shows American ethnomusicologist Frances Denmore (1867–1957) recording a Blackfoot chief using a phonograph for the Bureau of American Ethnology, 1916. Such recording devices recall moments in history much more accurately than human memory, which reconstructs events and stories in a way that makes them more culturally familiar.

Marienthal Study

1933

Marie Jahoda (1907–2001)

In the early 1930s, a young PhD student at the University of Vienna set out with a research team to study the impact of total unemployment on Marienthal, a small Austrian community. Marie Jahoda was a psychologist in training, but she was also a revolutionary thinker. She was an active member of the leftist Social Democrats during the heyday of Red Vienna, and her study of unemployment in Marienthal was motivated by a political hypothesis: Would unemployment lead to revolutionary class consciousness?

The researchers chose a variety of methods to evaluate this hypothesis and document the effect of unemployment on individuals, families, and the social fabric of the community. They compiled detailed records on each of the 478 families in Marienthal. They collected life histories, gave out questionnaires, and asked schoolchildren to write essays. They examined account books from the cooperative store, loan records from the public library, and census and migration figures. The researchers also initiated projects that benefited community members and generated data for their study.

In 1933, Jahoda and her colleagues published a monograph entitled *The Unemployed of Marienthal.* Contrary to their working hypothesis, they found no revolutionary class consciousness in Marienthal, only apathy and resignation. The bulk of the first edition was burned because its authors were Jewish. When Red Vienna fell to the Nazis in 1934, Jahoda was imprisoned for her political beliefs and released on the condition that she leave the country immediately. She emigrated to the United States, where she became part of a group of activist social psychologists in New York City. There she did research on anti-Semitism, intergroup relations, the authoritarian personality, and positive mental health.

As for the burned book, it first appeared in English almost forty years later as *Marienthal: The Sociography of an Unemployed Community.* As a seminal study of the sociopsychological effects of unemployment, *Marienthal* has been hailed as an enduring classic.

SEE ALSO [B = f(P, E)] = The Lifespace (1936), *The Authoritarian Personality* (1950)

This sign from the recent and ongoing Occupy Wall Street movement answers the question posed by psychologist Marie Jahoda in the early 1930s: Would unemployment lead to revolutionary class consciousness?

Archetypes

1934

Carl Gustav Jung (1875–1961)

The theories of C. G. Jung were drawn from many sources, including religion, myth, Eastern philosophies, anthropology, psychology, and folklore. Out of these sources, Jung created complex psychology, or depth psychology. Like Sigmund Freud's **Psychoanalysis**, complex psychology assumes a personal psychological unconscious; Jung, however, proposed a collective unconscious, grounded in human evolution, that is fundamental to human psychological functioning. The collective unconscious serves as the universal background that informs and shapes the personal, individual life. In his 1934 volume, *The Archetypes and the Collective Unconscious,* Jung wrote that archetypes are primordial or archaic images that are indigenous to the collective unconscious and help give shape to individual experience. As such, archetypes may take on a variety of symbolic expressions. Jung did not indicate that there were a fixed number of archetypes, but some common examples are the primordial mother, the sage, the trickster, and the hero. Because they are symbols of the human experience over time, archetypes appear in all cultures, although their form and expression will vary in each culture and era. The truth component of myths, religions, and fairy tales lies in their relation to archetypes.

Aspects of individual psychology are also archetypal, Jung argued. The persona (our social face), the animus/anima (male/female principle), the shadow, the ego, and the self are archetypes, but expressed uniquely in each person. The *ego* is the center of human consciousness and provides a sense of continuity in our conscious lives. The *self* is the deepest aspect of human personality and is the central archetype that knits the conscious and unconscious together, providing order and balance among all the psychic elements. The shadow contains the repressed and unfavorable aspects of the personality. For Jung, the goal of psychological development is what he termed *individuation.* In the process of individuation, which becomes more important in midlife and beyond, the challenge is to integrate the ego and the self, thus leading to psychological

wholeness and freedom. It is more often a journey than an arrival.

SEE ALSO Jungian Psychology (1913), *The Hero with a Thousand Faces* (1949)

Created by Carl Andersson in 1912, this Swedish bronze sculpture depicts "Puck," a mischievous sprite from English folklore and an expression of the Jungian archetypal trickster figure.

Zone of Proximal Development

1934

Lev Vygotsky (1896–1934)

In the first decade after the 1917 October Revolution, which brought the Bolsheviks to power in Russia, psychology underwent dramatic changes that eventuated in a search for a truly materialist science. It was during this period that the young lawyer turned psychologist Lev Vygotsky came to Moscow, where he developed a multifaceted research program, including an innovative approach to studying children's development, now often referred to as cultural-historical psychology. During the last two years of his life, he formulated the concept of the zone of proximal development.

Vygotsky's research showed that the cultural, social, and historical context of a child's life is critical for the development of psychological functions. He, his colleagues, and students developed an ambitious program of research that encompassed the study of memory and attention; the effects of brain damage on cognitive development, verbal thinking, and practical intelligence; and cross-cultural studies of ethnic minorities. In much of their work, attention was given to the practical application of their results to children's education.

With the term *zone of proximal development*, Vygotsky indicated that it is not enough to measure a child's current mental age; rather, what has to be considered is the child's potential for development—that is, we must seek to discover what more a child can do through interaction with a teacher, a parent, or older child. In other words, intellectual development is also a social process, and by this Vygotsky meant to indicate that even the highest mental processes have a social or cultural origin.

Unfortunately, Vygotsky died of tuberculosis at the very young age of thirty-eight while still working on his theory of sociocultural development. For a brief period, his ambitious research program was continued by his students and colleagues. Since the 1980s, American psychologist Barbara Rogoff has extended Vygotsky's theory by showing how learning is culturally embedded in a variety of diverse settings.

SEE ALSO Kindergarten (1840), Functional Psychology (1896), Casa dei Bambini (1907)

A "negro" mother teaches children numbers and the alphabet in the home of a sharecropper in Transylvania, Louisiana, 1939. Psychologist Lev Vygotsky's research showed that the cultural, social, and historical context of a child's life is critical for the development of psychological functions.

Thematic Apperception Test (TAT)

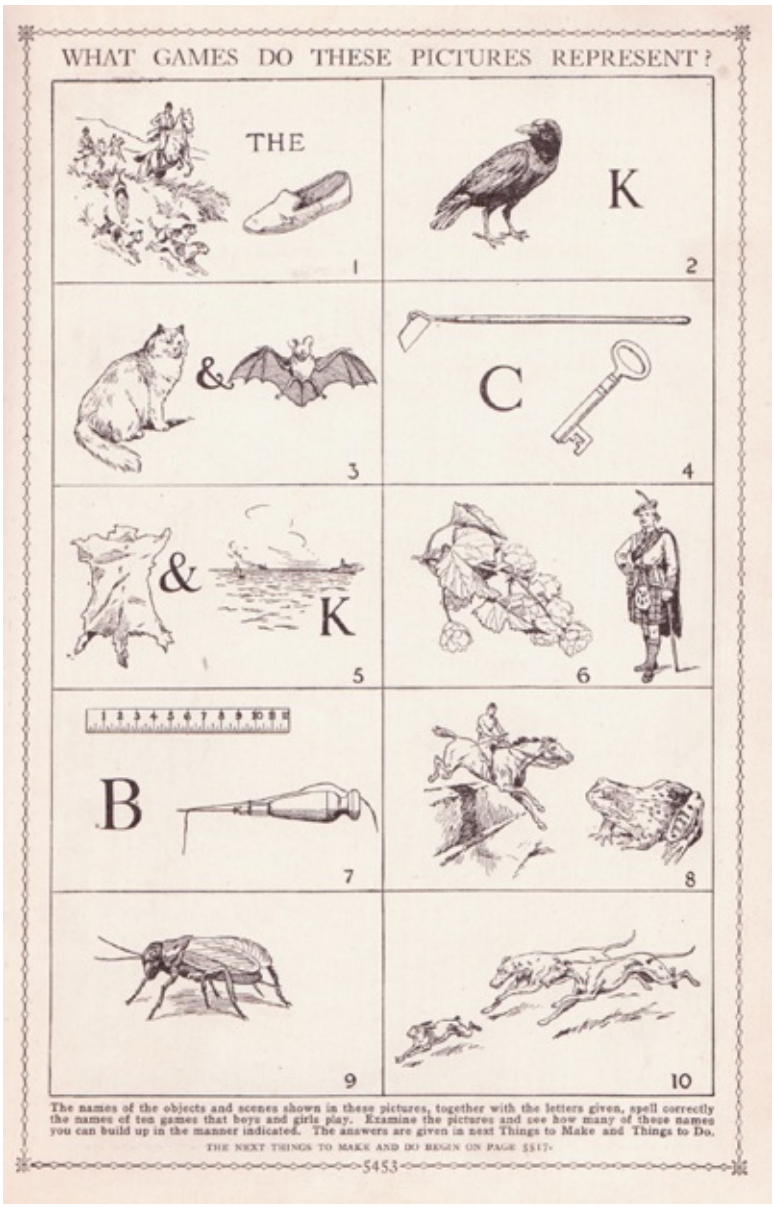
1935

Henry Murray (1893–1988), **Christiana Morgan** (1897–1967)

Can we understand ourselves and others through the stories we tell? More than one personality theorist has argued that we can, because human beings are storytelling creatures. One such narrative approach was the psychodynamic theory of psychologist Henry Murray and his partner, Christiana Morgan. Both were convinced that humans are motivated by unconscious factors that shape our personalities. Together they developed one of the most widely used tests of the twentieth century, the Thematic Apperception Test (TAT), first published in 1935, after a graduate student at the Harvard Psychological Clinic reported to Morgan that to pass the time while her young son was ill, she had asked him to tell stories based on pictures in magazines. The stories he told reflected his worries and hopes related to his illness. Morgan realized the possibilities of this approach and developed a set of illustrated cards using her own artwork, redrawn images from magazines, and photographs. Morgan and Murray called their new test the Thematic Apperception Test because they discovered that most people, when asked to tell a story based on illustrations about what has happened and what occurs next, would tell stories based on their own psychological needs and issues. The TAT was refined for several years in the clinic, and the results were used in the case studies reported in the clinic's major book, *Explorations in Personality* (1938).

There is a fascinating backstory to Morgan and Murray's collaboration. They met at a New York social gathering after Murray had become a physician, but he knew nothing about psychology. Murray and Morgan were married to others when they met; nevertheless they became romantically involved and worked together until Morgan's death. Morgan educated Murray in psychology so well that he became one of the field's most important figures in the twentieth century.

SEE ALSO Projective Tests (1921), Minnesota Multiphasic Personality Inventory (1940)


WHAT GAMES DO THESE PICTURES REPRESENT?
THE
1
K
2
&
3
C
4
&
K
5
6
B
7
8
9
10
The names of the objects and scenes shown in these pictures, together with the letters given, spell correctly the names of ten games that boys and girls play. Examine the pictures and see how many of these names you can build up in the manner indicated. The answers are given in next Things to Make and Things to Do.
THE NEXT THINGS TO MAKE AND DO BEGIN ON PAGE 5517.
5453

This page from The Book of Knowledge, *Volume XVII, published in 1919, uses illustrations to prompt children to make associations between images and words. If asked to expand on the picture in question, each child would form a different story that reflects his or her unique psychological needs and issues.*

Psychosurgery

1935

Egas Moniz (1874–1955)

Becky and Lucy fought a lot. Becky would throw her food, have tantrums, and bite Lucy when she was frustrated. She was more than a handful—until she had a new kind of surgery that separated her frontal lobes. Afterward, her behavior changed so much that her surgeon remarked that it was as though Becky had joined a “happiness cult.” Becky and Lucy were chimpanzees.

Yale psychologist Carlyle Jacobsen reported the case of Becky at the 1935 meeting of the International Neurological Congress in London. In the audience was the notable Portuguese neurosurgeon Egas Moniz. Moniz left the meeting convinced that this surgery held great promise. He conducted the first operation of what he was now calling psychosurgery on November 12, 1935, and within three months he had performed twenty psychosurgeries on patients with a variety of serious psychiatric disorders. He claimed that fourteen of the twenty patients either recovered or improved.

Reports of Moniz’s new intervention spread rapidly around the world. By 1949, about 5,000 such surgeries, now commonly called lobotomies, were being performed annually in the United States. Neurologist Walter Freeman was by far the most prolific, conducting 3,500 lobotomies from 1936 to 1970. With neurosurgeon James Watts, Freeman pioneered the use of the transorbital lobotomy, in which a surgical spatula was inserted and swept through the frontal lobes. Freeman then developed an in-office procedure in which an actual ice pick was inserted into the frontal lobes through the eye socket. The ice-pick lobotomy was performed on a number of children, including a four-year-old.

Despite Freeman’s advocacy of psychosurgery, its popularity declined in the 1950s and 1960s because of doubts about its efficacy and the introduction of new drugs that promised more effective treatment. However, as late as the early 1970s, figures within the Nixon administration promoted the use of lobotomies as a means to control dissident figures.

SEE ALSO Bedlam (1357), Electroshock Therapy (1938)

The Surgeon *by Flemish painter Jan Sanders van Hemessen, 1555.*

Psychological Lifespace

1935

Martha Muchow (1892–1933)

German psychologist Martha Muchow was among the first to fully explore the total environment of a child's development. Her posthumously published book, *The Lifespace of the Urban Child* (1935), examined the importance of a child's perception of the immediate environment which guides the child's behavior, indicating what must be done in order for the child to feel at home or in control of the environment.

Muchow's personal and professional story is remarkable. She became a schoolteacher in 1913, her educational philosophy having been shaped by Friedrich Froebel, the founder of the **Kindergarten** movement, and Maria Montessori. In 1916, she began to assist psychologist William Stern with his psychological studies of talented children. Muchow formally entered Hamburg University in 1919 as a doctoral student of Stern's and earned her doctorate summa cum laude in 1923. From this early period, Muchow worked with children and youth, seeking to understand and address problems they faced in urban environments, such as tuberculosis.

She began to develop her theory of lifespace (in German, *Lebensraum*) during the 1920s. Muchow was influenced by biologist Jakob von Uexküll's publications on lifespace, by which he meant the behavior of animals in a particular environment. Muchow extended the concept to include the social and cultural influences on psychological development. In her work, she argued that the child's experiential environment may well be different from the physical environment.

Muchow chose to study children who were growing up in urban environments. How did they gain a sense of mastery and belonging in such complex spaces? She combined surveys, interviews, map making, time samples, and close physical observations in multiple settings in order to obtain a more complete data set. Together, she argued, these methods allowed the researcher to understand the lifespace of each child.

The conceptual and empirical research conducted by Muchow opened new avenues of psychological research. Following her suicide after being dismissed by the Nazis, other psychologists began to borrow from her work. Such key figures as Kurt Lewin, Roger Barker, and Beatrice Wright founded what became ecological psychology, which is a vibrant specialization today.

SEE ALSO Gestalt Psychology (1912), [B = f(P, E)] = The Lifespace (1936), Ecological Systems Theory (1979)

A photograph of boys playing stickball in the streets of old Havana, Cuba, 1999. Psychologist Martha Muchow was among the first to carefully study the impact of a child's "experiential" environment—especially in urban spaces such as this—on his or her development.

Defense Mechanisms

1936

Anna Freud (1895–1982)

Anna Freud was the sixth and last child of Sigmund Freud and Martha Bernays. She was the only child of Freud's to follow in his footsteps into **Psychoanalysis**. After being analyzed by her father from 1918 to 1922, she developed the field of child psychoanalysis.

As a theorist, Anna Freud was concerned with the development of the ego. Briefly, her father's model of human personality theorizes that at birth, there exists only the id, which is concerned with the fulfillment of basic human needs —eating, sex, and so on. With **Psychosexual Development**, the ego emerges as a structure that mediates between the demands of the id and the real world. Finally, with the resolution of the Oedipal conflict, the superego emerges, which is the aspect of personality that reflects standards of right and wrong as expressed by one's parents.

A healthy personality is possible only if the ego is able to maintain a balance among the competing demands of the id and the superego, but these demands generate anxieties. In order to cope, the ego develops mechanisms to deal with these fears. Over the course of his career, her father had noted these ego defenses, but often without elaboration. Anna Freud brought them together and discussed them in a landmark volume called *The Ego and Mechanisms of Defense* (1936), using language that made it possible to understand them. As a result, many of the terms for these defense mechanisms passed into common usage.

Two examples will serve. Repression is a mechanism that pushes an anxiety-producing idea or event out of conscious awareness. The repressed idea remains active on the unconscious level and may find an outlet, as in a phobia. Sublimation is the mechanism that redirects unacceptable hostile or sexual feelings toward acceptable expression. For example, a very hostile person may turn his or her aggression toward positive ends by becoming a surgeon. Defense mechanisms can play a positive role in helping us keep our balance; however,

they may make us neurotic and keep us from effectively dealing with conflicts.

SEE ALSO Psychoanalysis (1899), Psychosexual Development (1905)

Anna Freud (center) spent much of her time lecturing in the United States after her father's death in 1939.

[B = f(P, E)] = The Lifespace

1936

Kurt Lewin (1890–1947)

What is the best way to understand human personality and behavior? Is it by studying individual differences? Or should we think of a person in the context of his or her total life? Kurt Lewin chose the latter, stating that behavior (B) is function (f) of the person (P) and the environment (E): B = f(P, E). In 1936, influenced by German psychologist Martha Muchow, he published a paper in which he called this equation the formula for the lifespace. Lewin was trained in the Gestalt tradition—that is, he was trained to always consider the parts in the context of the whole. He is well known for his statement that "there is nothing so practical as a good theory."

Lewin was at the University of Berlin until he left for the United States in 1933 (because of the Nazis). In Berlin, he and his students conducted an impressive and influential body of research, such as Bluma Zeigarnik's research on memory for completed and uncompleted tasks. Many women found places as graduate students with Lewin, which may have reflected a desire from early in his career, when he wrote that he wanted to liberate "women from the conventional restrictions on their freedom."

After two years in the United States, at Cornell, Lewin moved to the Iowa Child Welfare Research Station at the University of Iowa, where he studied group behavior. His studies of children working together under different leadership types—authoritarian, democratic, and laissez-faire—found that the democratic group was the most productive. His interest in group behavior took on new importance after he moved to the Massachusetts Institute of Technology (MIT) to set up the Research Center for Group Dynamics. He coined the term *group dynamics* to describe the active processes of groups in action. The studies of leadership in the context of groups led to the first encounter groups (small groups of individuals brought together to problem-solve and gain self-awareness), based on what Lewin called sensitivity training.

Lewin's legacy—the study of group dynamics, the field of organizational

behavior, and social justice research and action—used psychology to make a more humane world.

SEE ALSO Gestalt Psychology (1912), Zeigarnik Effect (1927), Psychological Lifespace (1935), Conformity and Independence (1951)

A dense crowd of concertgoers presents a unique environment for the study of group dynamics.

Sensory Deprivation

1937

Donald O. Hebb (1904–1985)

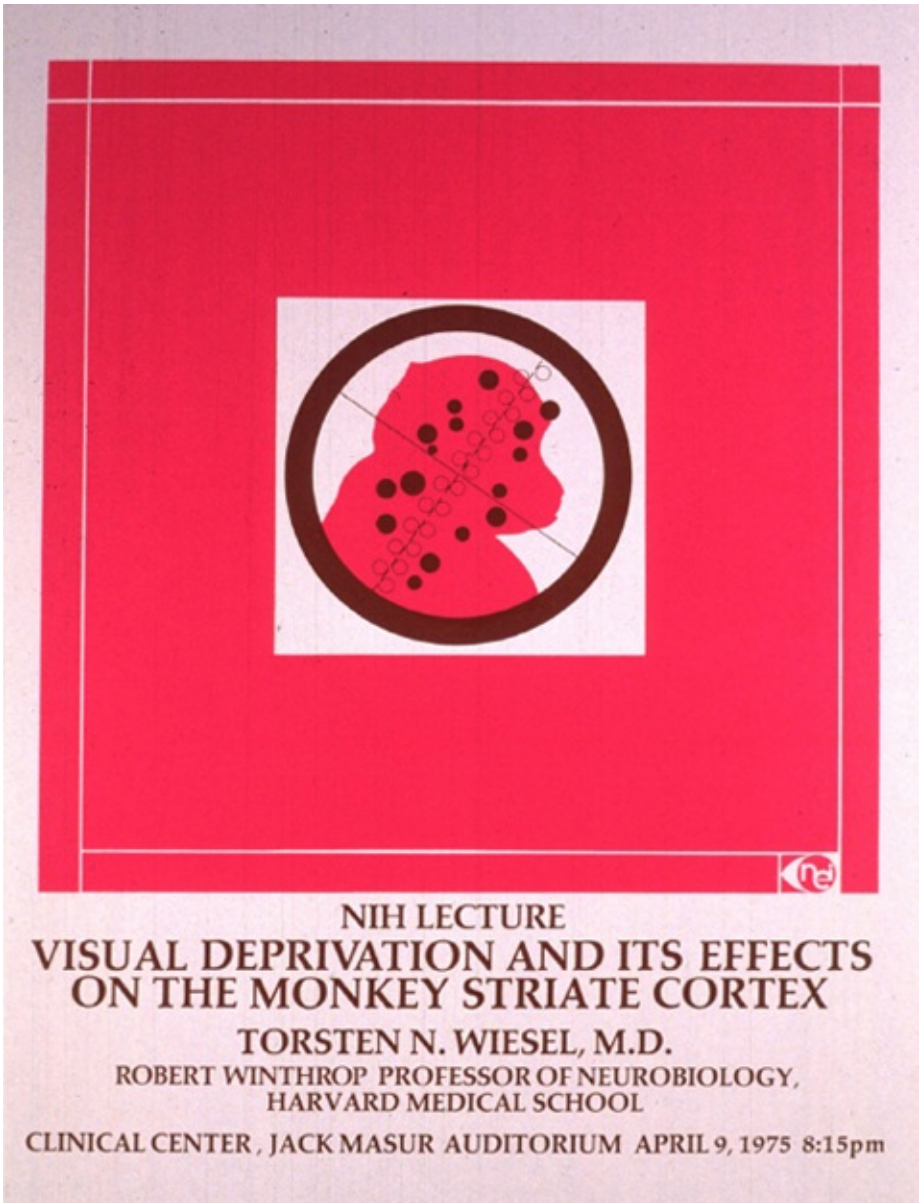
Canadian psychologist Donald Hebb began investigating the effects of light and dark deprivation on infant mammals in the late 1930s. In 1937, he became a research fellow at the Montreal Neurological Institute. By the late 1940s other scientists had begun researching sensory deprivation beyond the withholding of light and dark. Much of the initial research was devoted to understanding the role of early life experiences on brain development and behavior in a variety of organisms.

Subsequently, in the early years of the Cold War between the United States and the Soviet Union, American military and political leaders became concerned about the possible brainwashing of captured American soldiers. In order to understand the phenomenon, military and intelligence services provided funding for psychological research on humans, including studies of sensory deprivation. They hoped that this research would explicate a process, like brainwashing, whereby a normal adult could be induced to believe and act contrary to his or her normal state of conscious functioning.

At the request of both the United States and Canadian governments, Hebb and his colleagues, along with a number of other scientists, pursued their inquiries into the role of sensory deprivation and its psychological consequences for adult humans. Using several variants of sensory deprivation or isolation, the research showed the fundamental importance of sensory and social stimulation for normal psychological functioning; that is, participants in these studies who were isolated or deprived in various ways suffered a surprising range of impairments during and after the period of deprivation. These included psychotic thinking, delusional states, inability to think clearly or to concentrate, deficits in performance on many intellectual and motor tasks, hallucinations, paranoid ideation, somatic complaints, time-and-space disorientation, and high levels of anxiety. Many participants also experienced impairments in social functioning that endured after the period of deprivation. The research on sensory deprivation

revealed a marked human need for richness of both sensory and social stimulation as well as a vulnerability to psychological manipulation when such stimulation is absent.

SEE ALSO Choosing the Right Stuff (1958)


NIH LECTURE
VISUAL DEPRIVATION AND ITS EFFECTS ON THE MONKEY STRIATE CORTEX
TORSTEN N. WIESEL, M.D.
ROBERT WINTHROP PROFESSOR OF NEUROBIOLOGY, HARVARD MEDICAL SCHOOL
CLINICAL CENTER, JACK MASUR AUDITORIUM APRIL 9, 1975 8:15pm

A poster for the National Institutes of Health lecture, "Visual Deprivation and Its Effects on the Monkey Striate Cortex," 1975.

Turing Machine

1937

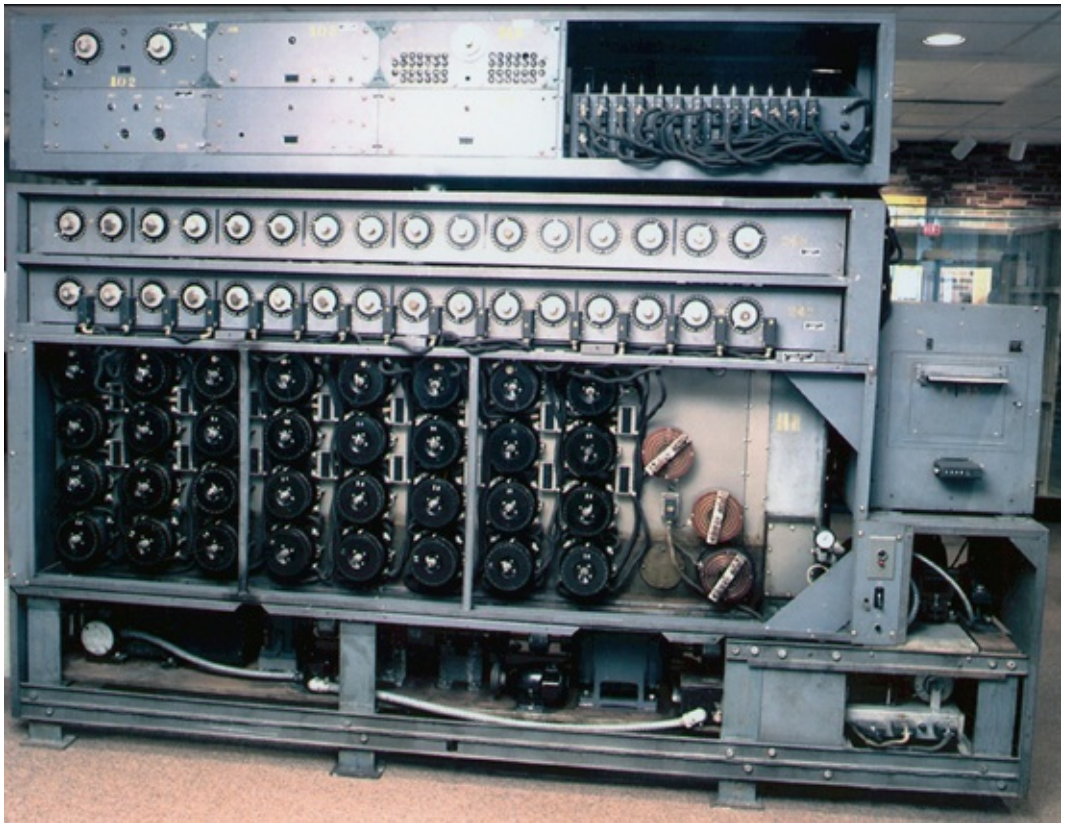
Alan Turing (1912–1954)

Alan Turing, a young British mathematician, was responsible for one of the great advances that helped make modern digital computing possible and thus laid the groundwork for the later study of artificial intelligence. In 1936, in a paper entitled “On Computable Numbers,” Turing proposed a computational device designed to investigate the limitations of what can be computed, proving that a machine could calculate anything that was quantifiable and offering a workable definition of computation that was used as the basis for developing the modern digital computer program. In 1937, Turing’s hypothetical machine was christened a Turing machine.

Turing used his mathematical skills to help break the German military codes during World War II. He used a computational method modeled on his earlier theoretical work that guided a machine, named the bombe, through nearly all possible number-letter combinations until a comprehensible message was generated. Turing showed how the concept of computation can be expressed in terms of a system of rules. In her book *Mind as Machine* (2006), researcher Margaret Boden wrote that the significance of the exercise was to show how “abstract machines could be described in a standard logical form, and how they could be used to do elementary computations out of which all standard arithmetical operations could be constructed.”

In 1950, Turing asked the question, “Can a machine think?” He devised a thought experiment—the Turing test—in which a human judge has a “conversation” with another person and a machine; the conversation is conducted via a keyboard, and the participants are not visible to one another. The machine has passed the test if the judge cannot tell the difference between the respondents’ answers. Although only a thought experiment, the Turing test proved important for later developments in artificial intelligence.

SEE ALSO Cybernetics (1943), Logic Theorist (1956)



U.S. Navy version of the bombe device, developed by Alan Turing and used by British cryptologists against the German cipher machine Enigma–M4 to decipher encrypted messages during World War II.

The Ames Room

1938

Adelbert Ames Jr. (1880–1955)

In 1938, Adelbert Ames Jr. designed a unique room meant to illustrate the principle of transactional functionalism, which states that visual perception is a function of both the visual stimulus and the viewer's past experiences and present assumptions about the perceptual world.

Ames had been influenced by the Harvard psychologist William James. While living in Paris, he became interested in visual optics, which became his primary focus. Through his research, he made many contributions to our understanding of both the physiology and psychology of vision.

After World War I, Ames took a position at Dartmouth College, in New Hampshire, where he helped develop what became the Dartmouth Eye Institute, conducted research on binocular perception, and made important discoveries about such vision problems as cyclophoria (in which the eyes rotate in opposite directions) and aniseikonia (in which an image is differentially magnified on the retina of each eye). Perhaps it was this latter condition that led him to construct objects that served to demonstrate transactional functionalism in visual perception.

The Ames room was constructed as a nonrectangular trapezoidal space, with the floor and ceiling inclined toward the horizontal and in which the facing wall is higher and farther away on one side compared to the other. When viewed through specially constructed peepholes, the room looks like a normal rectangular room; however, once objects are placed in the room, a perceptual distortion is introduced such that a person or object standing on one side of the room appears to be impossibly larger than a person or object on the other side of the room. The Ames room and other demonstrations illustrate the role of experience and expectations in how we perceive our world.

SEE ALSO Sensory Physiology (1867), Experimental Psychology (1874), The Visual Cliff (1960)

Katrin Klingenberg and Sascha Koehler, employees at the exhibition "Wanderings about the Senses" at Berlin's Adlershof science location, demonstrate the Ames room optical illusion on August 13, 2013.

Electroshock Therapy

1938

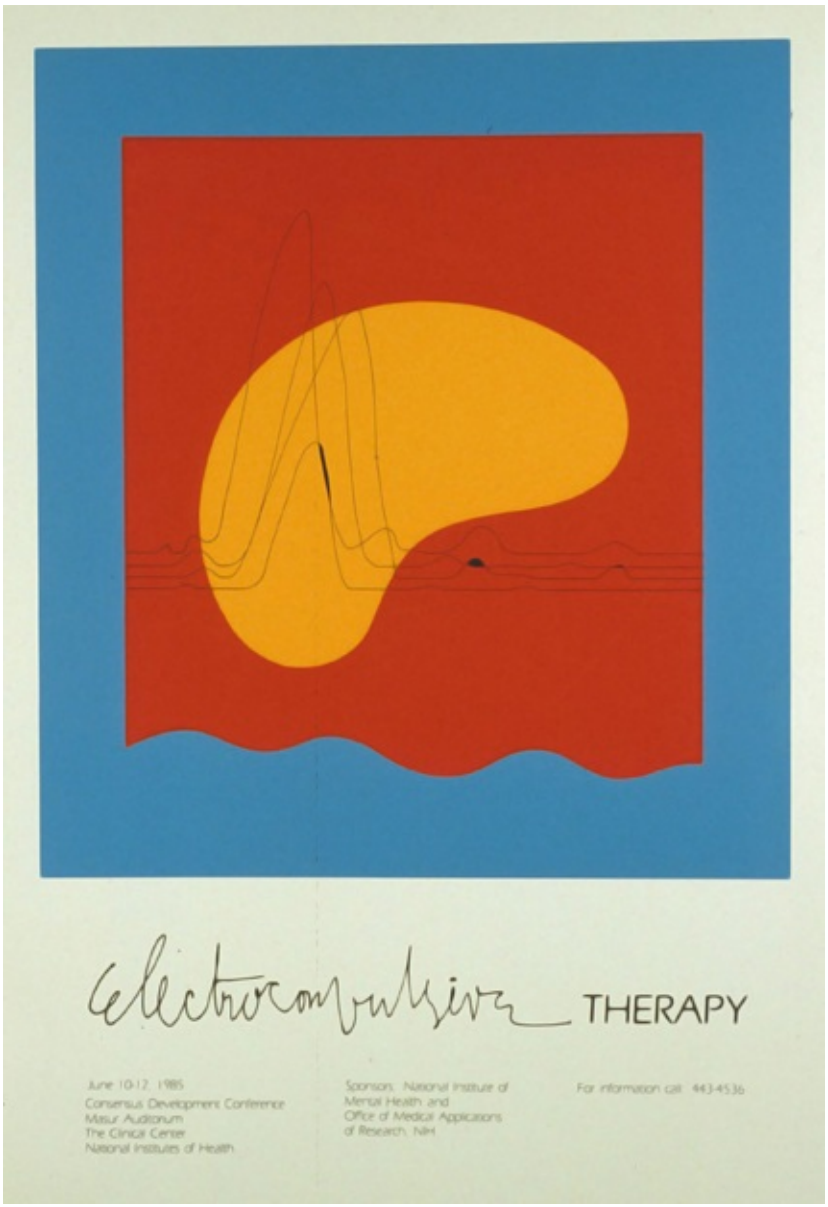
Ugo Cerletti (1877–1963)

In the 1930s psychiatrists and neurologists developed new physical therapies to treat individuals with serious mental illness. These included **Psychosurgery**, Metrazol convulsion therapy, insulin shock, and electroshock (now called electroconvulsive therapy, or ECT). These treatments represented intense interventions in the functioning of the patient's brain and body and resulted in varying degrees of success, though it was not understood how or why they worked.

Psychiatrist Ugo Cerletti worked his way up in the Italian psychiatric establishment after earning his medical degree in 1901, finally becoming chief of the Clinic for Nervous and Mental Diseases of the University of Rome in 1935. The practice of using drugs to induce convulsive fits in schizophrenic patients was already established by this time, but Cerletti thought that inducing seizures in patients through the application of electricity offered a more direct and effective mode of treatment. He theorized that convulsions caused the body to produce a substance that would revitalize the patient and reduce his or her symptoms. For several years he had conducted electroshock research on various animals but had not yet tried it on a human patient. Then, in April of 1938, the Rome police brought in a thirty-nine-year-old engineer whom they found delusional and muttering to himself on the street. Through trial and error, Cerletti found the right voltage to induce convulsions, and when the patient regained his senses after a short period of unconsciousness, he felt better; after a month of treatment he was able to return home, reportedly much improved.

The use of ECT spread rapidly around the world and over the years was much refined. Now it is typically given only to severely depressed or manic patients who have not responded to other treatments. Memory loss is frequently reported, and relapse occurs in about half of all cases.

SEE ALSO Psychosurgery (1935), Antidepressant Medications (1957)



A poster advertising a conference on electroconvulsive therapy from the National Institute of Mental Health, 1985. Developed in the 1930s, ECT has continued to be questioned both ethically and practically.

Psychosomatic Medicine

1939

Franz Alexander (1891–1964), **Helen Flanders Dunbar** (1902–1959)

Travel on the new train lines that began crisscrossing Europe in the middle of the nineteenth century led to reports of a puzzling new malady labeled “railway spine.” Travelers reported a variety of major and minor complaints for which physicians often could not find a physical cause. One explanation was that these were functional disorders, so called because they served a psychological purpose rather than reflecting physical pathology.

In the early twentieth century, the theories of Sigmund Freud concerning unconscious mental influences were used to account for these functional disorders, which he called conversion disorders. According to Freud, the conversion of psychological distress to bodily complaints occurs when psychic content—an image, an impulse, a desire—is incompatible with the ego, which represents societal conventions. As a result, the emotions associated with the psychic content are repressed so that they are not available to conscious thought. The energy associated with the affect is then converted into a physical disturbance that symbolizes the unacceptable content, thus partially solving the original psychological conflict. Freud called this the “jump from the psychic to the somatic.”

Between the world wars, theories about psychosomatic illness spread to the United States. Helen Flanders Dunbar, in her massive literature review, *Emotions and Bodily Changes* (1935), articulated it as the “interrelationships between emotional life and bodily processes both normal and pathological.” Hungarian émigré psychoanalyst Franz Alexander soon became the most visible figure in the new psychosomatic movement. Alexander argued in numerous books and articles that it was necessary to consider both psychological and physiological factors in diseases, including peptic ulcers, hyperthyroidism, gastrointestinal diseases, and coronary heart disease. In 1939, the journal

Psychosomatic Medicine began publication and served as a legitimizing force for the new field.

Psychosomatic medicine was considered part of the mainstream for many years, but gradually fell out of favor. However, the research that it generated was important in helping to create the field of health psychology later in the twentieth century.

SEE ALSO Psychoneuroimmunology (1975), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)

When doctors can't pinpoint a physical cause for maladies such as chronic back pain, they might suggest that the patient is suffering

from a psychosomatic ailment, in which psychological distress is converted into bodily pain.

The Organism (Mind and Body)

1939

Kurt Goldstein (1878–1965)

In 1933 the Nazis forced the neurologist Kurt Goldstein to leave Germany and seek asylum in Amsterdam, where he remained for a year before emigrating to the United States. While in Amsterdam he wrote the seminal volume *The Organism* (1939), in which he argued that there is an essential nature present in every organism that is not reducible to physiological processes.

Goldstein had long been one of Germany's best-known scientists, most notably for his work with aphasia patients. During World War I, he established an institute to investigate and treat the psychological effects of war on soldiers. From his clinical experience, Goldstein sought to explain how humans attempted to adapt to the world, even in the face of neurological or psychological deficits. Goldstein suggested that such striving reflects a deep human urge to live as completely and fully as possible. This striving toward self-realization is the activating force for human life.

Goldstein's argument was important to the long-running debate in psychology over whether brain functions are localized. Goldstein argued that the central nervous system operates as a network of related functions, and thus when one area of the brain is damaged, the disturbance of functioning is a result not only of local deficits but also of the impact on total brain processes. This approach reflected Goldstein's holistic views of the functioning of the total organism. Like **Gestalt Psychology**, Goldstein's ideas were part of an important trend in German science and culture in the interwar years, one that sought to revitalize German life through a reliance on older German intellectual traditions and placed the greatest value on understanding the mind and body as parts of an integral whole. Goldstein's work was of great importance far beyond Germany, as he influenced **Psychosomatic Medicine**, psychotherapy, and **Humanistic Psychology**.

SEE ALSO Gestalt Psychology (1912), Psychosomatic Medicine (1939), Hierarchy of Needs (1943),

Humanistic Psychology (1961)

"*Healthy Bodies–Active Minds," a wartime poster from the Office of War Information, Domestic Operations Branch, that advertises mind-and body-enhancing advantages offered by the United States Navy. According to neurologist Kurt Goldstein, enhancements in mind and bodily functioning are mutually reinforcing.*

Wechsler-Bellevue Intelligence Scale

1939

David Wechsler (1896–1981)

It was unusual in 1920s America for a doctoral-level psychologist to choose a career outside academia; it was even more unusual for such a person to work in the private professional practice of psychology. David Wechsler was just such an unusual person. An urbane, gentle individual of great intellect, Wechsler decided that he wanted to devote his life to helping others. His choice made a significant difference to millions of adults and children who have undergone psychological testing with one of the tests that he developed.

After five years of private practice, Wechsler accepted the position of chief psychologist at Bellevue Hospital, New York City's premier public psychiatric hospital. There he worked alongside such notable pioneer clinical psychologists as Elaine Kinder and Karen Machover. Their main activity was conducting psychological tests, which yielded results that were used by psychiatrists in the treatment of patients.

By the late 1930s, Wechsler had decided that the standard tests of intelligence then in use had many shortcomings. He objected to determining intelligence by the ratio of mental age to chronological age. In 1939, he constructed a new test that had multiple subtests divided into two scales, verbal and performance. The verbal subscale included such tests as comprehension and vocabulary, while the performance subscale included tests like picture completion and block design. Thus a nuanced picture of a person's intelligence could be obtained. An item from the information subtest illustrates the kind of verbal intelligence to be assessed: "What is the main theme of the Book of Genesis?"

The fourth edition of the Wechsler Adult Intelligence Scale was published in 2008. Two companion tests were also developed: the Wechsler Intelligence Scale for Children, which is in its fourth edition (2003), and the Wechsler Preschool and Primary Scale of Intelligence, which is in its third edition (2002). Various critiques of the scales have been offered over the years, the most serious of which is that the tests are culturally biased.

SEE ALSO Psychological Tests (1890), Binet-Simon Test of Mental Levels (1905), The Flynn Effect (1984)

David Wechsler used components from several existing tests to construct the first Wechlser-Bellevue Intelligence Scale.

Frustration and Aggression

1939

John Dollard (1900–1980)

A theme that runs through the psychoanalytic theory of Sigmund Freud is that humans are highly motivated to seek gratification of biological urges, such as sex, thirst, and hunger. In this process, they are bound to be frustrated by the nature of socialization because social forces present obstacles to the satisfaction of these urges. Humans, Freud suggested, react to this frustration with aggression, as other animals do. To the degree that this is true, it has important implications for the governance of human societies.

In 1939, a group of social scientists led by John Dollard published *Frustration and Aggression*, which drew on psychology and **Psychoanalysis**. The authors concluded that aggression can always be traced to some form of frustration and that frustration leads to a number of responses, including aggression. At the time, the social relevance of this work was fairly clear: anti-Semitism in Germany, the Spanish Civil War, the Great Depression, and racism in the American South (and elsewhere) were each real-life examples of the links between frustration and aggression. A later modification of the Dollard frustration-aggression hypothesis proposed that frustration leads to anger. It is anger that may lead to aggression if there are cues (such as a weapon) present when a person is most angry.

Around the same time, Tamara Dembo, a student of Gestalt psychologist Kurt Lewin, studied the dynamics of anger to explore Freud's theory that frustration leads to aggression. As part of her research, Dembo prevented the participants' completion of the apparently easy tasks. The situation always began as fun but grew tense when the experimenter frustrated the participant while continuing to insist that each task had a solution. As frustration increased, almost all the subjects displayed intense anger. Dembo interpreted the results in terms of the lifespace—that is, in terms of Lewin's formula (behavior is a function of the person in his or her environment).

SEE ALSO Psychoanalysis (1899), Gestalt Psychology (1912), *Rattus norvegicus* var. *albinus* (1929), Psychological Lifespace (1935), [B = f(P,E)] = The Lifespace (1936)

Policemen in riot control gear attempt to stem civil unrest in Lausanne, Switzerland, in the wake of protests against Swiss politician Christoph Blocher. According to a group of social psychologists led by John Dollard, the aggression displayed by rioters can always be traced to some form of frustration, and according to Sigmund Freud, frustration invariably results from obstacles presented by social forces to the gratification of basic needs and wants.

Minnesota Multiphasic Personality Inventory (MMPI)

1940

J. Charnley McKinley (1891–1950), **Starke R. Hathaway** (1903–1984)

During World War I, military officials became alarmed at the number of psychiatric casualties among soldiers who were involved in trench warfare, such as those who suffered from **Shell Shock**. To screen out soldiers with psychological problems, psychologist Robert S. Woodworth developed the Woodworth Personal Data Sheet, which included questions such as “Do you think you have hurt yourself by going too much with women?” and “Do you feel that nobody quite understands you?” This was a pioneering effort to objectively identify individuals with mental problems.

Unfortunately, it was not until the late 1930s that another objective test was developed for identifying people with mental disorders—the Minnesota Multiphasic Personality Inventory (MMPI). Although other personality tests had been developed by this time, none was adequate or suitable for people in psychiatric hospitals. Starke Hathaway, a psychologist, and J. Charnley McKinley, a psychiatrist, had the very specific task of finding a way to reliably identify patients suffering from a variety of psychiatric illnesses.

The final version of the first edition of the MMPI (1940) consisted of 550 statements that the respondent was asked to identify as true or false, such as “I believe I am being followed,” “I like to play drop the handkerchief,” “I have never had any black, tarry-looking bowel movements,” and “I am a special agent of God.” To validate the test, responses of people without mental disorders were compared with the responses of a large number of mental patients. While none of the items individually indicates mental health or the lack of it, the pattern of responses can be grouped into ten clinical scales and three validity scales. The MMPI proved to be very useful in identifying people with mental disorders and

distinguishing among them, so that depressed persons' responses are different from those with schizophrenia, for example.

The MMPI quickly became very popular in psychiatric hospitals. It also began to be used in industry, prisons, and higher education. By the early twenty-first century, the MMPI had been revised twice (in 1989 and in 2001). It is the most researched psychological test in history.

SEE ALSO Psychological Tests (1890), Binet-Simon Test of Mental Levels (1905), Projective Tests (1921)

An aerial view of Northrop Mall, part of the University of Minnesota-Twin Cities' East Bank area. The MMPI was developed at the hospital on the University of Minnesota campus.

Psychical Discharges (Cortical Stimulation)

1941

Wilder Penfield (1891–1976)

A young psychologist is under a surgical tent at the Montreal Neurological Institute. It is 1939, and psychologist Molly Harrower is about to record some of the most interesting data ever provided by brain surgery patients. Her role is to record verbatim what each one reports. The patients all suffer from epilepsy and have agreed to participate in an innovative procedure devised by neurosurgeon Wilder Penfield. With patients under local anesthetic, Penfield surgically exposed the cortex of the brain; then, using a tiny electrode, he stimulated various parts of the brain. Some spots appeared to be related to the aura that many epileptic patients experience prior to a seizure; these he surgically removed. Areas relevant to movement and sensation yielded the expected experiences when stimulated; for example, patients reported seeing flashes of color when the visual cortex was touched.

When Penfield first reported these findings in 1941, he also indicated that further stimulation of the temporal lobe produced surprising results, including what he called “experiential hallucinations,” or psychical discharges. When certain areas in the temporal lobe were touched by the electrode, patients reported hearing songs they had last heard as a child, or they saw a portrayal of some event they may have viewed in a movie. In one famous reenactment, the patient cried out, “I can smell burned toast” when a seizure origin point was stimulated. Penfield thought these hallucinations were accurate flashbacks of the original experience. He also found what he termed “interpretative illusions,” which included experiences of déjà vu and perceptual distortions as well as a sense of unreality, euphoria, or dread.

Most of his patients reported these experiences as quite intense, with qualities very different from everyday experiences—more dreamlike than the reality of daily life. Penfield’s intention was to help his patients gain relief through surgical intervention. But he found that cortical stimulation also had implications for **Localization of Brain Function** and for memory.

SEE ALSO Localization of Brain Function (1861), Brain Imaging (1924), Split-Brain Studies (1962)

Dr. Wilder Penfield (left) and Dr. Maitland Baldwin. Penfield, one of the leading neurologists of his era, demonstrated how electrically stimulating the temporal lobe could yield psychical discharges, in which patients respond by describing flashbacks and déjà vu experiences.

Behavior Genetics

1942

John Paul Scott (1909–2000)

As a young geneticist Paul Scott first came to Bar Harbor, Maine, in 1938, to spend a summer at the Jackson Laboratory. There he studied aggressive behavior in inbred strains of mice. This was the beginning of a long career in which he pioneered a new field of scientific study—behavior genetics—and he published his first scientific article on it in 1942. While he began with mice, Scott became best known for his work with dogs. Through his intensive research program, Scott was able to clearly show how the interplay between genetics and the environment was important to development. Scott brought to his scientific research a deep commitment to using science to try to solve some of the social problems of his time—especially the problem of war.

Other scientists continued and expanded the research begun by Scott. Using such techniques as twin and adoption studies, they have sought to tease out the contributions of genes to a variety of traits and abilities, such as intelligence. What they have found is that it is impossible to completely separate genetic influence from environmental influence, as the two work together, a process sometimes called epigenetics. Genes shape the environment, and the environment shapes genetic expression. For example, genetics strongly influence such traits as introversion and extroversion. Extroverted parents are more likely to have homes where there is a lot of stimulation and opportunities for social interaction, as compared to introverted parents, whose homes may be quieter and less social. Genes and behavior both influence the kind of homes children are reared in, thus inducing the children in those homes to be more or less introverted or extroverted.

As the great Canadian psychologist Donald Hebb once wrote, “Development is due 100 percent to genetics and 100 percent to environment.”

SEE ALSO Nature versus Nurture (1874), Genetic Epistemology (1926), Growth Studies (1927), Neuroplasticity (1948)

"*Leading Breeds of Dogs," illustration by F. E. Wright, from* Webster's New Illustrated Dictionary, *1911. Geneticist Paul Scott is chiefly known for his study of the interplay between genetics and the environment in five breeds of dogs, described in his classic* Genetics and the Social Behavior of the Dog *(1965).*

Cybernetics

1943

Norbert Wiener (1894–1964)

Mathematician Norbert Wiener coined the term *cybernetics* to describe the study of self-regulating systems. During World War II, Wiener was working on a military project on the guidance and control of aircraft fire when he came to the conclusion that to solve the self-correcting tracking problem, he would need to employ the notion of feedback, both in the plane and in the human gunner, as an integrated system. In 1943, his scholarly paper “Behavior, Purpose, and Teleology” brought together ideas from physiology, behavioral psychology, and engineering to describe a cybernetic organism, or one that was both man and machine. This paper became the manifesto for cybernetics and led to a series of annual conferences that were crucial for the postwar development of what is now referred to as cognitive science.

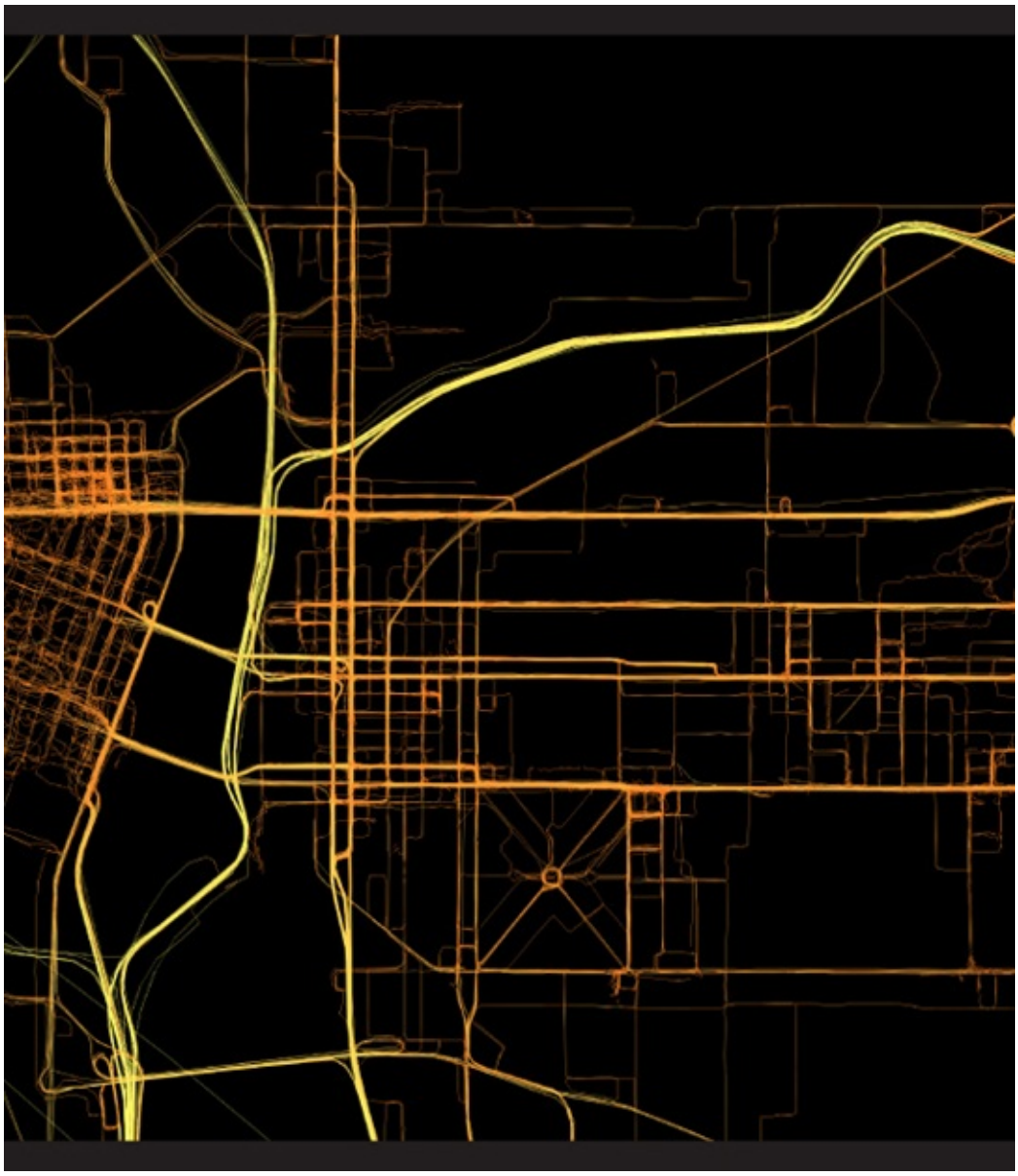
From the beginning, cybernetics was an interdisciplinary research area in which psychologists, biologists, mathematicians, engineers, and others studied the interaction of brain and machine. Three concepts are crucial in cybernetic theory: feedback, information, and purpose. Feedback relies on an information flow about the organism or machine in order to regulate the activity of the organism or machine. Self-regulating systems have a purpose or goal, such as maintaining a constant temperature.

An event that took place at the Macy conference of 1952 illustrates these concepts. Information theorist Claude Shannon brought along a mechanical maze-running rat equipped with an electrical contact “finger,” which it used to detect the walls of a maze made up of twenty-five squares. Using feedback from these contacts and programming that allowed it to avoid blind alleys, the rat successfully navigated the maze.

The ways these ideas were deployed in combination with information theory to encompass both human systems (biological and social) and machine systems led to a period of innovative scientific discovery. With parallel developments in computer science and neuroscience, the new field of cognitive science was born,

which has gradually changed the field of psychology.

SEE ALSO Turing Machine (1937), Logic Theorist (1956), Center for Cognitive Studies (1960)



A map generated from Portland, Oregon, resident Aaron Parecki's GPS logs between 2008 and 2010 shows just how monitored our every movement has become. According to cybernetic theory, which indirectly encouraged the advent of cognitive science, gathering detailed, computerized feedback such as this can be used for the more beneficent purpose of developing a self-regulating system that helps us to avoid future navigation errors.

The Doll Studies

1943

Kenneth B. Clark (1914–2005), **Mamie Phipps Clark** (1917–1983)

On May 17, 1954, in the case of *Brown v. Board of Education of Topeka, Kansas*, the United States Supreme Court declared racial segregation in public schools to be unconstitutional. In their unanimous opinion, the justices cited evidence from social-science research to support their decision. A critical part of that evidence was the "doll studies" of Mamie and Kenneth Clark. The two met at Howard University in Washington, D.C., in 1934. Kenneth soon graduated and moved to Columbia University. They were secretly married during Mamie's senior year, and she continued at Howard for her master's degree, completing it in 1939. In her master's thesis she explored how racial identity formed in black preschool children.

After completing her degree, Mamie joined Kenneth at Columbia, where they continued their research on racial identity. They added new materials to the study, including dolls of different skin colors (two white and two black). In each school, the children were presented with the dolls and asked to pick one in response to requests such as "Give me the doll that you like to play with," "Give me the doll that is a nice doll," "Give me the doll that looks bad," and "Give me the doll that is a nice color." They found that many African American children equated good qualities with white dolls and attributed negative qualities to the darker colored dolls, even though they knew themselves to be African American. The Clarks completed their research in 1943.

The results were disturbing, but with the Clarks' permission, the National Association for the Advancement of Colored People used the doll studies as evidence of the psychological damage of racial segregation in *Brown.* The decision was a bright and shining moment in American history, though many challenges lay ahead. Mamie and Kenneth Clark showed the power of psychological science in the cause of social justice.

SEE ALSO Growth Studies (1927), Identity Crisis (1950), Contact Hypothesis (1954), Robbers Cave

(1954)

Mamie Phipps Clark designed the Doll Studies to test the self-concept of black children. Kenneth helped with test administration and interpretation of results. He called it one of the most painful experiences of his life.

Hierarchy of Needs

1943

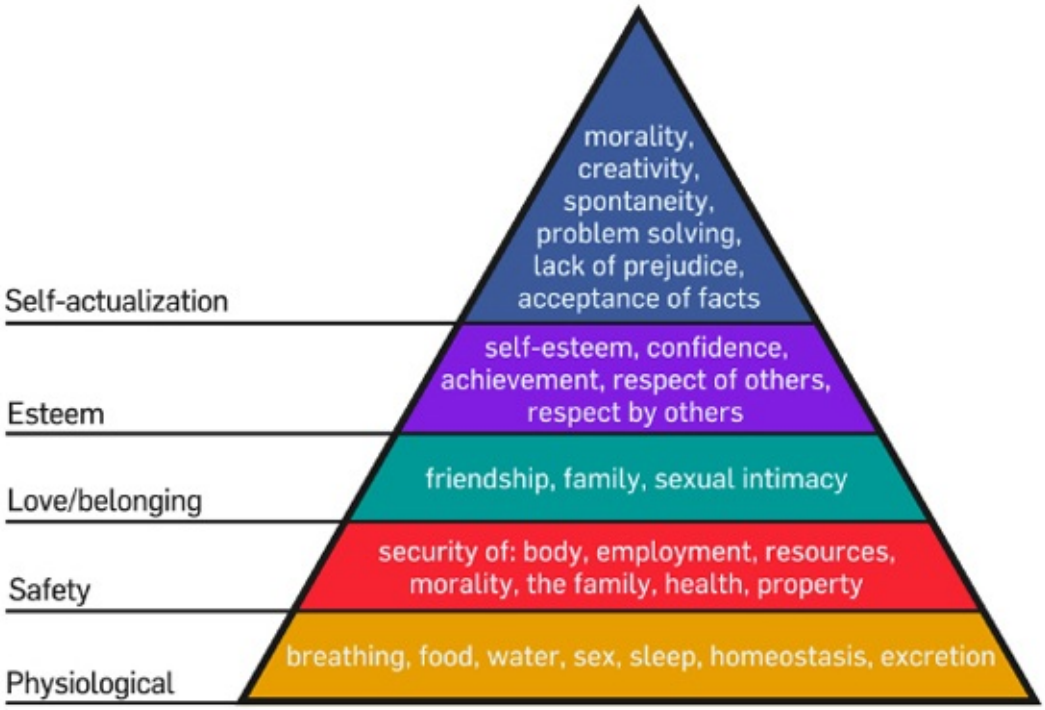
Abraham Maslow (1908–1970)

As a young psychologist in New York City, Abraham Maslow became a junior member of an intellectually rich group that was interested in questions of culture and personality. Maslow grew up in an unhappy home in Brooklyn and was determined to make his life better. Intellectually stimulated by his colleagues, in 1943 he proposed a new theory of what motivates humans and forms our personalities. He suggested that our motivation is related to the satisfaction of our needs, which are hierarchically related to one another. Thus our most basic set of requirements are physiological: we must eat to survive. Once these are met, we then are motivated to be safe, then we have strong wishes to belong and to love and be loved, and once those are met, we then want to find esteem and respect from others. The highest need, one that we can focus on when all the others are met, is the desire for *self-actualization*, a term he borrowed from neurologist Kurt Goldstein. Maslow wrote that self-actualization meant striving to be all that one is capable of being.

Maslow argued that psychology was overly concerned with human deficits and problems and that we knew too little about human potential. To address this, he studied people he viewed as self-actualizing, such as Abraham Lincoln, Albert Einstein, and Eleanor Roosevelt. People who are in the process of self-actualizing, he wrote, are spontaneous, creative, empathic with others, and self-directed. Self-actualizing people are likely to have "peak experiences," or times when awareness is heightened and they experience awe and even ecstasy.

Maslow's theory emphasized personal growth, becoming, and the value of heightened subjectivity. With his colleagues he created a "third force" in psychology that emphasizes the positive side of human nature and foreshadowed the later development of positive psychology.

SEE ALSO Cultural Relativism (1928), *The Organism* (1939), Humanistic Psychology (1961), Positive Psychology (2000)


morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts
Self-actualization
self-esteem, confidence, achievement, respect of others, respect by others
Esteem
friendship, family, sexual intimacy
Love/belonging
security of: body, employment, resources, morality, the family, health, property
Safety
breathing, food, water, sex, sleep, homeostasis, excretion
Physiological

According to Abraham Maslow's hierarchy, the highest need—pursued when all others have been met—is self-actualization, which involves the development of creativity, spontaneity, and empathy, as well as "peak experiences" of heightened awareness or ecstasy.

Myers-Briggs Type Indicator (MBTI)

1943

Katharine Cook Briggs (1875–1968), **Isabel Briggs Myers** (1897–1980)

In 1923, when Katharine Briggs—already an astute observer of people—read the English translation of Carl Jung's book *Psychological Types*, she found a language for her observation that people differ in important ways in how they perceive the world.

The two basic human characteristics that Jung described were introversion and extroversion. For Jung, these terms described basic orientations to the world. An introvert is a person who is oriented to the internal world of his or her own thoughts and feelings, while an extrovert is oriented toward the external world of other people and objects. Katharine and her daughter, Isabel, used these Jungian types as a starting point. By 1943, they had the rudimentary form of a personality test that became known as the Myers-Briggs Type Indicator (MBTI). Further testing and refinements were made, and the MBTI was made publicly available in 1959.

Myers and Briggs posit sixteen basic personality types based on four dichotomies: introversion (I) versus extroversion (E), intuition (N) versus sensing (S), feeling (F) versus thinking (T), and perception (P) versus judging (J). Each of these indicators expresses a preference for the way we understand our world. For example, we perceive the world either through sensing or intuition. If sensing is dominant, then we want concrete data from our senses, as in the 1950s TV show *Dragnet:* "Just the facts, ma'am." If intuition is dominant, a person will rely on theory and seek to find patterns in the world. Our decision-making functions are thinking and feeling, which use the information from sensing or intuition to make choices. If we prefer the feeling function, we will probably make decisions that create or keep interpersonal harmony, while those who prefer thinking are more likely to use logic and rationality to arrive at a decision.

The MBTI has proven to be a reliable instrument that people can use to understand themselves and others. It has been used in many settings, from the offices of major international corporations to religious groups to educational institutions.

SEE ALSO Psychological Tests (1890), Jungian Psychology (1913), Projective Tests (1921), Archetypes (1934), Thematic Apperception Test (1935), Minnesota Multiphasic Personality Inventory (1940)

Jolly Toper *by Dutch Golden Age painter Judith Leyster, 1629. The merry drinker in this work is likely to have a more extroverted, "feeling" orientation that enjoys the company of others.*

Autism

1943

Leo Kanner (1894–1981), **Bruno Bettelheim** (1903–1990), **Ivar Lovaas** (1927–2010)

Andre is four years old, but seldom speaks. When touched by his mother, he turns away and never returns affection. Andre does not make eye contact and appears uncomfortable when others look at him. He has a few behaviors that he repeats over and over. His caregivers have to watch carefully, as he is prone to engage in self-harming behaviors, such as beating his head on the floor.

The above is a fictional case study of a child with autism. In the United States alone, the official government estimate is that one in eighty-eight children suffers from autism or autism spectrum disorder. It is a pervasive developmental disorder, meaning it affects nearly every aspect of a person's life, and it is five times more common among boys than girls. Autism is usually detected by the time a child is two and a half years old, but signs may appear in the first few weeks of life. It is not clear what causes autism.

Leo Kanner, a psychiatrist at Johns Hopkins University, was the first person to describe autism in a landmark 1943 paper. He offered the view that autism was somehow connected to mothers who were not warm and responsive to the child. This idea was picked up by other mental health providers, including the psychoanalyst Bruno Bettelheim. Bettelheim elaborated a theory of autism based on what he called the "refrigerator mother." The term refers to a mother who withholds affection from the child and acts as though she does not want the child to exist. This set of actions leads the child to withdraw into an internal psychological shell in self-defense. Later, behavioral therapists such as Ivar Lovaas demonstrated that behavioral techniques, such as positive reinforcement, could be used to teach autistic children to speak and engage in social interactions. Animal scientist Temple Grandin is an example of a prominent, well-known, and successful person with autism.

SEE ALSO Psychosexual Development (1905), Behaviorism (1913), Operant Chamber (1930), Token

Economy (1961)

Leo Kanner.

The autism awareness ribbon displays colored puzzle pieces, reflecting the mystery and complexity of the autism spectrum disorders.

Personality and the Behavior Disorders

1944

Joseph McVicker Hunt (1906–1991)

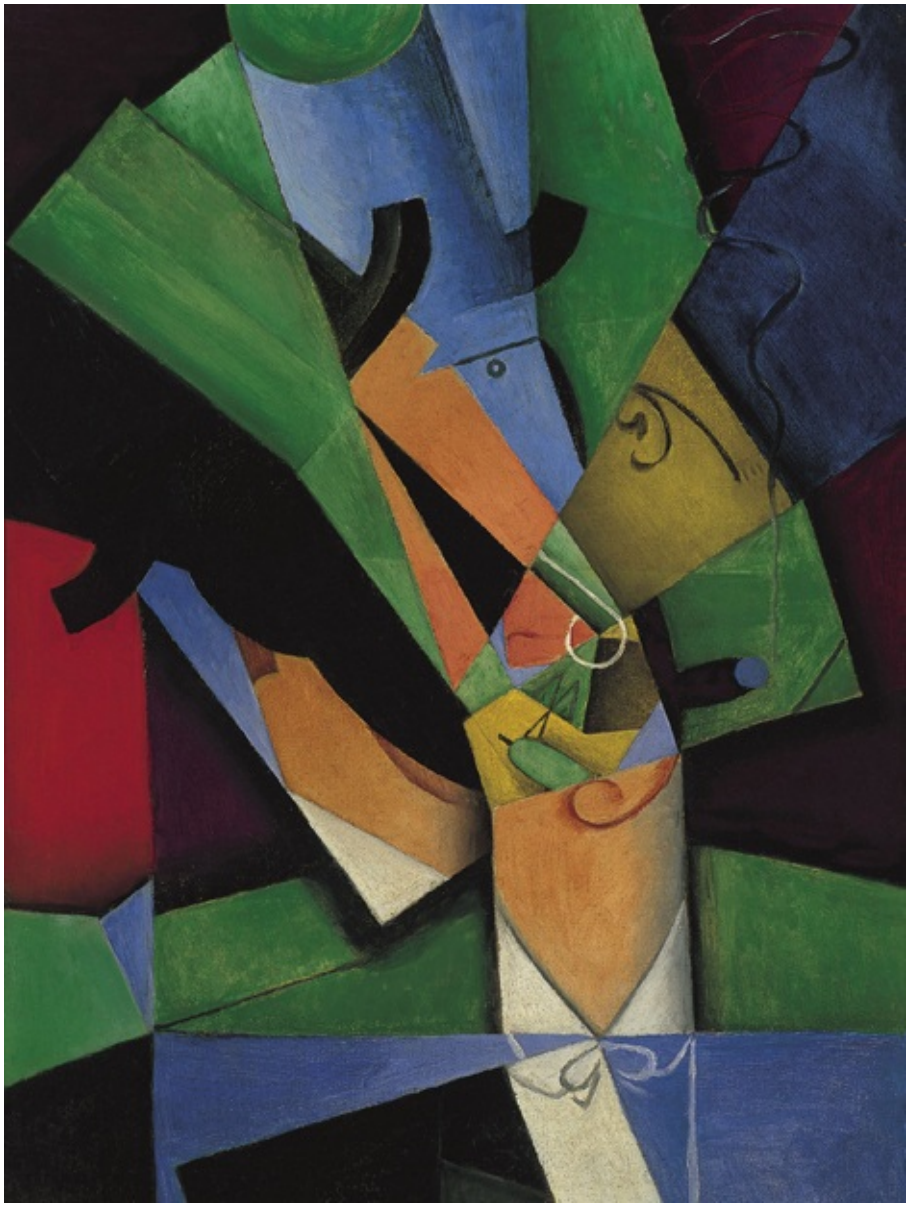
One of the most exciting and important fields that emerged in American psychology in the first half of the twentieth century was the scientific study of personality. Stimulated by the theories of Sigmund Freud and Carl Jung, academic psychologists sought to understand the forces that shaped human character. A number of important books on the topic were published, including Henry Murray's *Explorations in Personality* (1938); but if only one is to be singled out, then the magisterial *Personality and the Behavior Disorders* (1944) is the best choice. It was conceived and edited by Joseph McVicker Hunt and became one of the truly landmark publications of midcentury American psychology.

The two-volume study summarizes extant work relevant to personality and mental disorders in a rich theoretical and practical mix. Contributors include experimental psychologists, psychiatrists, psychoanalysts, endocrinologists, internists, neurologists, sociologists, anthropologists, and others. The book represents a landmark of American research and theory about the multiple facets of human personality and problems that emerge in its development. The topics chosen and the methods used foreshadowed the shift in American scientific psychology to a greater emphasis on mental disorders. After World War II, many of the book's contributors developed extensive research programs on the problems laid out in the book.

Psychodynamic, if not strictly psychoanalytic, approaches infused most of the chapters. Among the topics most fully developed were those on psychological deficits, experimental neuroses, personality problems in childhood, personality assessment, and the measurement of brain activity and its correlation with personality functions.

The two-volume work served as a benchmark for what was then known: the chapters were excellent summaries of the contemporary state of the field, but perhaps most important, they served as templates for future research.

SEE ALSO Psychosexual Development (1905), Projective Tests (1921), Minnesota Multiphasic Personality Inventory (1940)



Spanish artist Juan Gris's 1913 cubist painting, The Smoker (Frank Haviland)*, is reflective of the multiple facets of human personality and pathology described in Joseph McVicker Hunt's landmark publication,* Personality and the Behavior Disorders.

Sex Roles

1944

Georgene Seward (1902–1992)

The terms *sex roles* and, since the 1970s, *gender roles* have been used by psychologists and other social scientists to refer to the socially designated behaviors, attitudes, and activities that have been deemed appropriate for men and women. Sex roles have been a source of research interest for psychologists since the late 1800s. At that time, female psychologists like Helen Thompson Woolley and Leta Hollingworth published empirical studies to challenge beliefs about male and female differences that contributed to the sex-role stereotypes of the time. In the post–World War II period, interest in sex roles intensified because many women had taken on nontraditional employment during the war. In 1944, psychologist Georgene Seward chaired a committee on Sex Roles in Postwar Society for the Society for the Psychological Study of Social Issues. She called for a radical restructuring of traditional sex roles in the postwar reconstruction so that men and women could participate equally in the world of work. Her call was supported by an analysis of the cultural conflict faced by women under contemporary gender arrangements and was followed by a 1946 book, *Sex and the Social Order.*

When the women's movement of the late 1960s and 1970s gained momentum, feminist psychologists conducted studies to investigate the effects of sex-role stereotypes on attitudes and behaviors in a wide variety of domains. In one line of research, the relationship between sex-role stereotypes and perceptions of mental health was assessed. Some results showed that while mentally healthy men were described as stereotypically masculine and mentally healthy women were described as feminine, a healthy adult (sex unspecified) was described more often as having masculine traits. In 1975, the journal *Sex Roles* was established to publish sociological and psychological research on a wide range of gender issues.

SEE ALSO *The Feminine Mystique* (1963), Fear of Success (1969), *Women and Madness* (1972),

Measuring Androgyny (1974)

A female doctor examines a child, 1974. In the 1960s and 1970s, the movement toward equal-opportunity employment for men and women that began during World War II intensified, with many women assuming occupations traditionally held by men.

Failure to Thrive

1945

John Bowlby (1907–1990)

During World War II, thousands of British infants and children were in hospitals and orphanages because of the loss of parents and other caregivers. Many of these children were passive, listless, and physically smaller than normal. Although these children received adequate amounts of food, it was noticed that there was often little physical contact from caregivers. Early explanations were that the children were depressed due to the loss of their caregivers. It was from these observations that psychiatrist John Bowlby began a series of studies that highlighted the importance of attachment for healthy development.

Since many of these institutionalized children were below expected weight and height, the term *failure to thrive* was coined, and by 1945 it was in wide medical use. But it soon became apparent that children who lived with their families could also fail to thrive. This was the period when psychoanalytic theory was in its heyday in North America. As a result, psychological or psychosocial theories were offered to explain the illness. For example, some argued that a child failed to thrive because of emotional withdrawal or rejection by one or both parents, though most put the focus on faulty mothering: either the mother didn't know how to provide proper care or she harbored hostility toward the child. Because failure to thrive was found more often in homes below the poverty line, psychosocial explanations such as cultural deprivation were also offered.

By the 1970s, behavioral psychologists showed that there were ways to use incentives and rewards to reinforce eating behavior, regardless of any underlying psychological problem in parent or child. More important, health psychologists and other researchers began to show that the major determinant of failure to thrive is simply insufficient caloric intake. While there remain cases in which the condition is the result of psychological problems, the vast majority of cases today are treated successfully by providing appropriate amounts of food.

SEE ALSO (Surrogate) Mother Love (1958), Attachment Theory (1969), The Strange Situation (1969)

Abandoned boy holding a stuffed toy animal amid ruins, following German aerial bombing of London, England. Photograph by Toni Frisell, 1945. The first systematic studies on "failure to thrive" were done with children whose parents were killed in the WWII bombing of London.

Logotherapy

1946

Viktor Frankl (1905–1997)

In 1942, neurologist and psychiatrist Viktor Frankl, his wife, his parents, and his siblings were sent to Nazi concentration camps; only he and one sister survived. Frankl spent time in four different camps, including Auschwitz and Dachau. Like most other people who spent time in concentration camps, Frankl experienced many horrors and saw firsthand how inhumane humans can be. He also experienced and observed great compassion and generosity in the camps. Despite it all, Frankl emerged from the camps with a deep understanding of what is most important to humans. Based on his experiences, he believed that the basic quest of human existence is a search for meaning. His most famous and widely read book, *Man's Search for Meaning* (1962), was originally published in Austria in 1946. (The first English-language edition, published in 1959, was entitled *From Death-Camp to Existentialism.*) To date, the book has sold more than twelve million copies.

Frankl was educated in Vienna, earning his medical diploma from the University of Vienna. During this period he was influenced by the psychoanalysts Sigmund Freud and Wilhelm Reich. His wartime experiences led to the development of a third type of Viennese psychotherapy, after **Psychoanalysis** and Adler's individual psychology. He labeled his existential approach logotherapy, or meaning (*logos*) therapy. There are three basic principles in logotherapy: meaning is the most basic desire for humans; there is always meaning to be found in life, no matter how difficult the circumstances; and we are free to find meaning.

We can find meaning in three primary ways: we can make meaning through what we do; we can find meaning through our relationships with others; and meaning can come through our attitude toward unavoidable suffering. Frankl further argued that while suffering is unavoidable, we can transform human tragedy into something that gives meaning to our lives. Frankl believed that logotherapy is a positive force not because it changes our situation but because it

helps us change our attitude toward life.

SEE ALSO Psychoanalysis (1899), Family Therapy (1950), Cognitive Therapy (1955)

Berlin Holocaust Memorial. Victor Frankl's observation of great compassion within the inhumane conditions of the Nazi death camps inspired his founding of logotherapy.

Client-Centered Therapy

1947

Carl R. Rogers (1902–1987)

As part of the "third force" of **Humanistic Psychology** that arose in American psychology in the twenty-five years after the end of World War II, Carl Rogers's client-centered (or, later, person-centered) therapy was influential in developing modern psychotherapy. Rogers grew up quite religious and was a theology student before switching to psychology. Early in his career, his therapeutic work with children led him to posit that a nurturing and positive environment was critical for healthy psychological development. Rogers meticulously studied the therapeutic process and detected what he said were the critical therapist variables: the provision of empathy, congruence, genuineness, and unconditional positive regard. He argued that each of us has an inner capacity to know what positively helps us, but this inner capacity can become obscured by obstacles in daily life. For example, when significant others make their love and acceptance conditional upon living and acting in certain ways, these terms of worth can block our psychological growth. The job of the therapist is to create a therapeutic relationship in which such conditions of worth are eliminated and the person can recover this innate capacity toward growth.

Rogers articulated the basic principles of client-centered therapy in 1947 and then spent many years investigating the application of the principles in actual clinical cases. The influence of client-centered therapy has been considerable, even though it is rarely practiced in its original form today. Psychotherapy research has revealed that there are common factors that must be present for any type of therapy to work. Not surprisingly, perhaps, these factors are very much like what Rogers described: almost all therapists today are trained to be active listeners, provide appropriate reflections of the client's words, and show empathy as the basis for successful psychotherapy, no matter what other specific techniques may be involved.

Rogers's commitment to helping people become fully functioning and his belief in personhood, self-determination, and human strengths endure in

contemporary movements such as positive psychology.

SEE ALSO Hierarchy of Needs (1943), Logotherapy (1946), Cognitive Therapy (1955), Humanistic Psychology (1961)

Photograph of Carl Ransom Rogers, 1902.

Self-Fulfilling Prophecy

1948

Robert K. Merton (1910–2003)

In the decade after the end of World War II many urban and suburban white homeowners were worried that African Americans would move into their neighborhoods. Motivated by such fears, many white homeowners sold their homes, often below market value, as soon as a black family moved into their neighborhood, worried that having a black family in the neighborhood would decrease property values. In 1948, social scientist Robert K. Merton used this as an example of a "self-fulfilling prophecy." As Merton noted, it was the white homeowners' anxiety that created the very phenomenon they feared.

Earlier in the century, sociologist W. I. Thomas had written, "If men define situations as real, they are real in their consequences." It is this axiom that Merton elaborated upon to explain self-fulfilling prophecy after the war, yet the idea or principle has been recognized for millennia, from ancient Greece and India through the history of both Western and Eastern civilizations: the stories of Krishna killing his uncle Kamsa, who was told by an oracle that one of his nephews would kill him; of Oedipus killing his father, Laius, who abandoned him after being told by a seer that his son would kill him; and many others are historical examples of self-fulfilling prophecy.

The psychological processes of perception and expectation underlie the concept. How we perceive events, others, and ourselves exerts marked influence on how we respond. This in turn may directly influence the outcome of events or how others respond to us. Stereotypes may function as one variant of self-fulfilling prophecies, as can be seen in studies of stereotype threat, or the fear that one may act in a way that confirms the stereotype. For example, when asked to list race on an exam, African American students performed poorly compared to the times when they were not asked to list their race, as did female students when asked to list gender prior to taking a math exam.

SEE ALSO Contact Hypothesis (1954), Robbers Cave (1954), Stereotype Threat (1995)

Arjuna, a prince of Pandu, meets his cousin and ally, Krishna, at Prabhasakshetra in this illustration from the Hindu epic Mahabharata. *Krishna's prophesized murder of his uncle, Kamsa, parallels the self-fulfilling prophecy of Oedipus.*

Neuroplasticity

1948

Jerzy Konorski (1903–1973)

At age four, little Alexander speaks English, Spanish, and Greek fluently. Since birth, his father has spoken Spanish and his mother has spoken Greek to him, while he learned English at day care. It is not surprising that Alexander and other children with similar experiences could be so linguistically skilled. Scientists and parents have long observed how quickly children learn. This is because the brain for the first decade or so of life is highly plastic, or malleable, constantly adding new neural connections from experience. Polish neuroscientist Jerzy Konorski first described this in 1948. It was long thought that this plasticity ended sometime in adolescence and that adult brains were rigid and not capable of major changes. However, research conducted since the 1990s has revealed that, in fact, there is significant plasticity even in the adult brain. As we learn new things, our brains change. When we learn, neural connections involved in the learning are strengthened. Neuroscientists contend that our experiences change both our actual brain structure and how it is organized.

This is possible because within the brain the connections between neurons are constantly changing depending on their usage. The other key concept is the organization of our sensory and motor systems in the cortex. Sensory input from the body is relayed to an area of the brain called the somatosensory strip, while the output—our response—comes from the primary motor cortex.

Research has shown that these areas change and reorganize depending on experience. One study on touch discrimination involving blind volunteers showed that the subjects experienced changes in the visual cortex, which is normally only responsive to visual stimulation in sighted individuals. Scientists now think that the human brain remains plastic throughout life as we constantly adapt to changing experiences.

SEE ALSO Brain Imaging (1924), Split-Brain Studies (1962), The BRAIN Initiative (2013)

Research demonstrates that neural connections in the brain continue to reorganize, based on life experience, well into adulthood.

The Kinsey Reports

1948–1953

Alfred Kinsey (1894–1956)

Undoubtedly two of the most widely discussed books in American history were the Kinsey reports—*Sexual Behavior in the Human Male* (1948) and *Sexual Behavior in the Human Female* (1953)—both of which stirred intense passions even as they reported on human passions. Kinsey, by training an entomologist, brought to his study of sexual behavior the same commitment he brought to his scientific study of wasps.

Kinsey was not the first American to systematically study sexuality. In the 1920s, the Rockefeller Foundation quietly funneled funds to the National Research Council for support of their Committee for Research on Problems of Sex. For more than twenty-five years, the committee conducted a wide variety of investigations into sex, but none was as far-ranging in its challenge to what many considered American sexual norms as the Kinsey reports were.

What made Kinsey's reports so controversial and upsetting? First, they indicated that same-sex sexual activity was more widespread than had previously been thought. This is not to say that exclusive homosexuality was common; rather, sexual behavior over time might involve a variety of practices, including homosexuality. In this, Kinsey anticipated the work of Lisa M. Diamond on *Sexual Fluidity* (2008). Kinsey's conclusions were based on interviews as well as on what has come to be known as the Kinsey scale. The scale uses 0 to indicate exclusive heterosexuality and 6 to indicate exclusive homosexuality. Using this scale, Kinsey found about 12 percent of men and 11 percent of women aged twenty to thirty-five rated their sexual experience as 3, which indicates equal heterosexual behavior and homosexual behavior. Almost half the men reported sexual arousal to persons of both sexes in their lives. Masturbation was found to be a common practice by both sexes.

The reports brought a great deal of positive and negative attention to Kinsey. Much of his work anticipated the sexual revolution of the 1960s and beyond.

SEE ALSO *Psychopathia Sexualis* (1886), *Human Sexual Response* (1966), *Sexual Fluidity* (2008)

Hieronymus Bosch's The Garden of Earthly Delights *(c. 1480–1490) displays a range of carnal interactions between nude men and women.*

Big Five Personality Factors

1949

Donald W. Fiske (1916–2003)

In the twentieth century, the ancient **Humoral Theory** found a new expression in the development of trait theories of personality. In psychology, the word *trait* refers to a person's enduring pattern of thinking and acting. How does one decide what a trait is? One common way is to follow the lexical hypothesis theory, which suggests that descriptions of personality are encoded in a culture's language. Once these words have been identified, then a complex statistical technique called factor analysis can be used to discover how they hang together in factors or groupings. In 1949, psychologist Donald Fiske was the first to propose that there are five basic factors that can account for human personality. Ironically, Fiske later strongly disagreed with how his work was interpreted by other personality researchers.

The idea of five basic factors was picked up again in the 1960s, but it was not until the 1980s that the current form of the "Big Five" was developed. As expressed by psychologists Paul Costa and Robert McCrae in 1976, human personality can be described using just five broad terms: openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism (or OCEAN). The associated personality test is the NEO Personality Index—Revised (NEO-PI-R), in which N stands for "neuroticism," E stands for "extroversion," and O stands for "openness to experience." Examples of descriptors for each factor might be as follows. A person who scores high on openness to experience is intellectually curious, while someone with a high rating on conscientiousness is responsible. For the factor of extroversion, the high scorer is characterized as action oriented, while for agreeableness, others see that person as easy to get along with. Finally, for neuroticism, a high scorer is anxious, while a low scorer is calm. There are important cross-cultural differences, too, as some of the Big Five traits are not present in certain cultures, especially those where research shows that other factors, such as interpersonal relatedness, are also important.

SEE ALSO Culture and Personality (1935), Minnesota Multiphasic Personality Inventory (1940)

Human emotions and expression, copperplate engraving from 1749 appearing as Plate VIII in Volume II of L' Histoire Naturelle *by naturalist Georges-Louis Leclerc, Compte de Buffon.*

The Hero with a Thousand Faces

1949

Joseph Campbell (1904–1987)

Mythology has been a wellspring for modern psychology. Sigmund Freud was influenced by the material excavated from ancient sites and used an archaeological model of the mind to describe the layers of consciousness (unconscious, preconscious, conscious). He framed the crux of personality development as a reenactment of the myth of Oedipus. More than Freud, Carl Jung relied heavily on the study of myth. From comparative mythology, Jung developed the concept of the collective unconscious and **Archetypes**, and he wrote that dreams help us maintain balance through their reference to our mythic past.

Mythologist and writer Joseph Campbell was a student of Freud and, especially, of Jung. From them and a variety of other sources, including his own original explorations in comparative mythology, Campbell articulated the role of mythology in our psychological development more clearly than any other writer.

The hero's journey is a central concept in Campbell's writing. More clearly than Jung, Campbell read world mythology and saw in the multiplicity of stories one central theme, that of the hero. The hero's quest is for the central reality or truth of life. In *The Hero with a Thousand Faces*, published in 1949, Campbell phrased the journey thus:

> A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won; the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man.

Campbell repeatedly found this story in mythology around the world. The hero may have been Buddha, Jesus, Prometheus, or some local deity. The core truth is the same, though the story finds particular expression within its own cultural norms: separation from the norms of daily existence, a journey that

reveals a source of power, and then a return that offers transformation. This, Campbell posited, is the basic truth of psychological growth and fulfillment.

SEE ALSO Psychoanalysis (1899), Jungian Psychology (1913), Transpersonal Psychology (1968)

Voyage of King Arthur and Morgan Le Fay to the Isle of Avalon *by Frank W. W. Topham, 1888. King Arthur's quest into a "region of supernatural wonder" parallels that of other mythological and semihistorical heroes.*

Stress

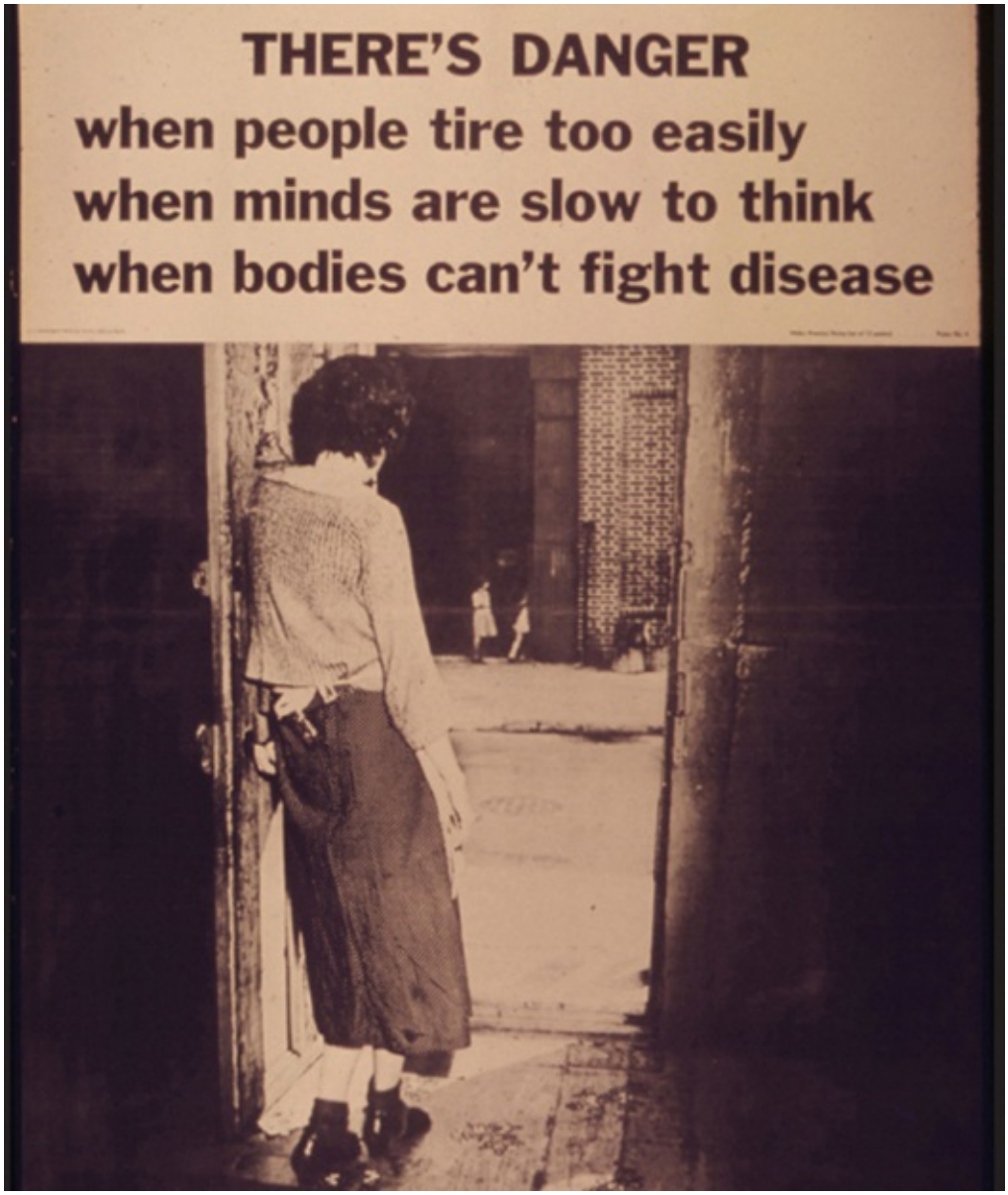
1950

Hans Selye (1907–1982)

The idea that emotions play an important role in our physical health is an old one that can be found across time, from the ancient **Humoral Theory** to **Psychosomatic Medicine** between the world wars. After immigrating to Montreal, Hungarian endocrinologist Hans Selye developed a model of the relationships among stress, health, and disease that has been called one of the most influential medical theories of the twentieth century. While searching for a new hormone in experiments with laboratory rats, Selye found that his rats developed a set of symptoms that included damage to various internal organs, all linked to the hypothalamus-pituitary-adrenal system. He borrowed a term from engineering—*stress*—to describe the cause of the symptoms. His first complete articulation of the link between stress and illness came in his 1950 book, *The Physiology and Pathology of Exposure to Stress.*

For nearly two decades, Selye continued his research on how stress may lead to physical breakdown. His model, the general adaptation syndrome (GAS), proposed that many events could become stressors that lead to a generalized response in the organism as it seeks to adapt to the occurrence and return to normal functioning. The mobilization of the organism's defenses includes a first response from the hypothalamus, which leads to the activation of the adrenal glands, which produce corticoid hormones, which in turn can cause a variety of health problems if the organism is unable to return to its previous balance. Shortly after Selye's work became known, psychological factors were shown to be critically important in stress and its treatment. Events large and small, from marriage to the everyday hassle of finding a parking space, are now seen as stressful, with implications for both physical and psychological health. A research and treatment industry has arisen around the concept of stress, with psychologists playing a leading role. This industry is fully supported by the public, for whom stress has become linked with almost every disease and malaise.

SEE ALSO Psychosomatic Medicine (1939), Psychoneuroimmunology (1975), Mind-Body Medicine (1993)



This c. 1944 poster from the Office of War *Information, Domestic Operations Branch, warns about the dangers that can arise when stress takes a toll on the body and mind.*

Antianxiety Medications

1950

Frank M. Berger (1913–2008)

While trying to find a way to preserve penicillin, physician and pharmacology researcher Frank Berger noticed that a chemical he was using seemed to have a calming effect on laboratory mice. In 1950, he and chemist Bernard Ludwig synthesized the chemical and called it meprobamate; in 1955 it was first sold under the brand name Miltown. It soon became the best-selling drug introduced up to that time, with thirty-seven million prescriptions written for it in the United States alone by 1957.

In the years since the introduction of Miltown, other pharmaceutical firms developed and marketed their own antianxiety medications, including Librium, Equanil, and Valium, which are typically referred to as minor tranquilizers. Now there are multiple kinds of anxyiotic (or antianxiety) medications, from benzodiazepines (such as Xanax) to barbiturates, which provide a sedative effect. These types of drugs passed into popular culture as “mother’s little helper”; initially, however, they were more often prescribed for men, especially middle-class men who were part of the gray-flannel-suit corporate culture of that period.

Why were these drugs so popular? Anxiety is a hallmark of modern industrial and postindustrial societies. Of course people have experienced anxiety throughout history, yet in some ways, it is the quintessential emotion of modern life. Anxiety is a set of emotional and physiological responses that are part of who we are as humans, and our responses may range from the adaptive to the maladaptive.

When anxiety becomes maladaptive, it is one of the major mental illnesses. According to the National Institute of Mental Health, approximately 13 percent of adults between the ages of eighteen and fifty-four suffer from an anxiety disorder at any one time. Older adults experience anxiety disorders at higher rates than younger adults, with serious implications for health and independent functioning. Diagnostic manuals of mental illnesses in Western societies include

twelve anxiety disorders. The most common are generalized anxiety disorder, panic disorder, obsessive-compulsive disorder, specific phobias (e.g., agoraphobia and fear of snakes), and social phobias.

Antianxiety medications are often used to treat these disorders, but cognitive and behavioral therapies have proven to be just as effective.

SEE ALSO Cognitive Therapy (1955), Antidepressant Medications (1957), Systematic Desensitization (1958)

Although antianxiety medications were initially marketed to white-collar men, by the 1960s most prescriptions were being filled for "harried housewives."

Identity Crisis

1950

Erik Erikson (1902–1994)

Lakesha, age thirteen, seems very caught up in herself. She spends a great deal of time thinking about her appearance, wondering about her future, and talking about her activities. She doesn't seem to think anything bad can happen to her. In this, it turns out that she is very similar to most of her same-age peers. The preoccupations of Lakesha and her friends illustrate what Erik Erikson called the identity versus role confusion stage of psychosocial development.

In his 1950 book, *Childhood and Society*, Erikson posited that identity development is the major challenge of **Adolescence**. The demands of this stage of development center on such questions as, Who am I? What am I going to do with my life? How do I fit into my family and my world? For teenagers, these questions and the consequent actions are driven by the need to individuate, or differentiate themselves from their peers and others in their world. Positive identity formation results in a clearer sense of self and provides a platform for the next stage of psychosocial development, which often includes marriage and vocational choice.

There is an interesting biographical aspect to Erikson's emphasis on identity: he did not know his father. He was born in Frankfurt, Germany, to a single mother, who married a Mr. Homburger when Erik was three. Later in childhood, Erikson discovered that Mr. Homburger was not his biological father. Thus he came to adulthood not knowing his own identity. After being trained as a child psychoanalyst by Anna Freud, Erikson married an American woman and emigrated to America during the Nazi period in Germany. After various appointments, he was offered a position in California. On his move there, he decided to settle his identity by becoming his own father: he changed his name from Homburger to Erikson.

SEE ALSO Psychoanalysis (1899), Adolescence (1904), Growth Studies (1927)

Street graffiti in Vancouver, BC, Canada, conveys the sense of alienation that many adolescents struggle through as they develop an individual identity.

The Authoritarian Personality

1950

Theodor Adorno (1903–1969), **Else Frenkel-Brunswik** (1908–1958)

One of the most influential centers of social theory before World War II was the Institute for Social Research at the University of Frankfurt. Led by sociologists Max Horkheimer and Theodor Adorno, the Frankfurt School developed a critique of the impact of capitalism on families and interpersonal relations. The members of the Frankfurt School left Germany after the Nazis came to power and spent the war years in New York City.

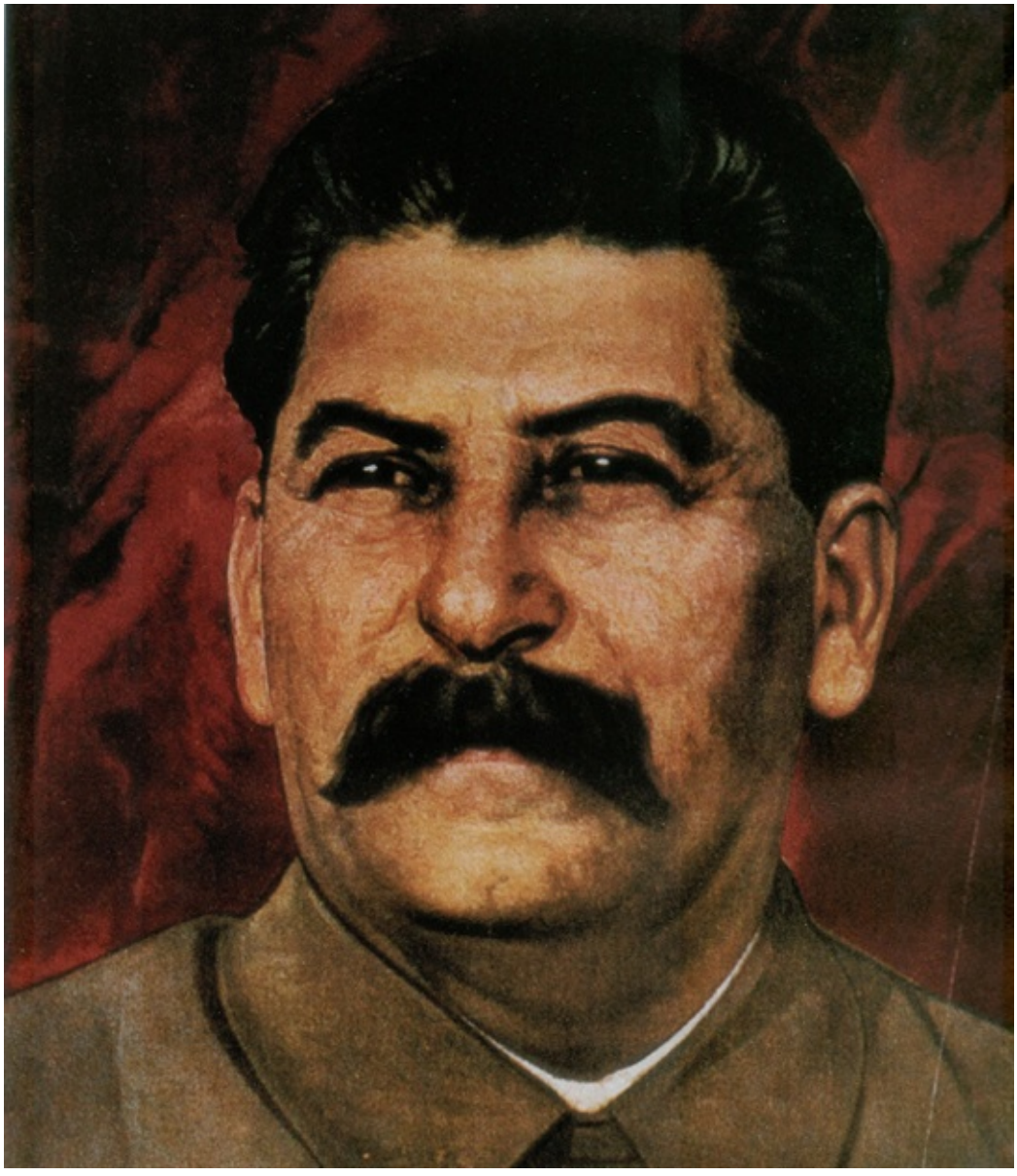
After World War II, Adorno and fellow émigré Else Frenkel-Brunswik collaborated with two US personality psychologists at the University of California, Berkeley, to study the authoritarian personality. Was there an authoritarian personality that led people to support dictators and oppressive policies? To try to answer this question, Adorno and his colleagues conducted interviews and questionnaires, then analyzed the results within a psychoanalytic and Marxist framework.

The research resulted in their book, *The Authoritarian Personality* (1950). It became one of the most widely read books of the postwar period and was a major influence on the current field of political psychology. Adorno and his colleagues concluded that the authoritarian personality is the product of punitive parenting in an exploitive, capitalist economic system. Authoritarians' parents were likely to punish them for any disobedience or disagreement with conventional social mores. Adults with authoritarian personalities were prone to prejudice against any out-groups, such as religious and ethnic minorities. Their interpersonal style is rigid, with a deep commitment to conventionality and a corresponding aggressiveness toward those who violate the norms. At the same time, adults with authoritarian personalities are submissive toward authority figures and tend to be impressed with displays of power.

In recent years, an impressive body of research in political psychology has

explored contemporary expressions of the authoritarian personality, which now is thought to occur at any point on the ideological spectrum from very conservative to very liberal.

SEE ALSO Marienthal Study (1933), Culture and Personality (1935)



A portrait of Stalin—the consummate authoritarian—by Soviet painter Isaak Brodsky, 1935.

Family Therapy

1950

Nathan Ackerman (1908–1971), **Murray Bowen** (1913–1990)

Life in post–World War II America should have been a dream. After a Depression and then a world war, things began to return to normal. The economy rebounded, new houses in attractive suburbs were available at low cost, hundreds of time-saving household gadgets were invented, and television became the focus of family entertainment. A new room called the family room was created in suburban homes, and a new piece of furniture, the sectional couch, was invented to bring families together as never before. In this seeming paradise, family therapy emerged as a new form of treatment. There were several key figures in its development, chief among them Murray Bowen and Nathan Ackerman.

Family life, far from being a haven in a heartless world, was often experienced as oppressive, especially for women. Families were potentially the source of delinquency and **Schizophrenia**. As one popular TV program in 1959 cautioned, “Seeds of insanity could be lurking in your own home.”

Family therapy, sometimes called family systems therapy, positioned itself as the arbiter of family mental health and social relations. Since the family was seen as a system of interlocking relationships, the only way to treat it was as a single organism. Typically, one family member was perceived as the identified patient, the one with problems, but because this person was part of a system, the symptoms reflected the health or illness of the whole organism. To restore families to healthy functioning, the focus of treatment could no longer be the individual; rather, the entire family unit was brought into the therapeutic hour.

This approach to treatment was radically different from **Psychoanalysis** or such American psychotherapies as **Client-Centered Therapy**. In those, the problem was perceived to lie within the individual, and treatment was provided to help the individual adjust to the world. In family therapy, the focus was on the communication and interaction styles of the family together. Healing happened as the system—communication and relationships—improved its functioning.

SEE ALSO Client-Centered Therapy (1947), Gestalt Therapy (1951), Double Bind Theory (1956)

Photograph of John Atherton next to a brand-new television set in Eugene, Oregon, c. 1953. Around this time, television became the focus of family entertainment, and family therapy emerged as a new form of treatment.

Brainwashing

1950

Edward Hunter (1902–1978)

It is no surprise that one of the most controversial topics in modern psychology is that of mind control, or brainwashing. The fear that such techniques were being used by enemies of the United States during the Cold War led the US government and its allies to mount an intensive and secret effort to understand how mind control works and how they could use it. As a popular novel (1959) and then a movie (1962), *The Manchurian Candidate* was a thrilling account of a person brainwashed into becoming an assassin in the service of a communist conspiracy.

The term *brainwashing* entered popular usage in English through the journalism of Edward Hunter. In a series of articles that were first published in 1950, Hunter exposed the efforts of the Chinese to brainwash American prisoners during the Korean War. By this he meant that the Chinese were able to convince the prisoners that the United States was evil and had abandoned them and that the communist form of government was superior to American democracy. By extension, the Chinese government and other communist governments had brainwashed their own populations to believe that they were living in the best of all possible worlds.

Immediately after the Korean War, the US government secretly poured money into research on mind control. The term *brainwashing* also was widely used in popular culture, sometimes with chilling effect, as when southern segregationists suggested that anyone who favored racial equality had been brainwashed by communists.

Mind control took on a new urgency during the 1970s and 1980s with the rise of popular religious cults such as the Unification Church. Psychologist Margaret Singer became a leading investigator of the practices of such cults on their mostly youthful followers. Her report on mind-control techniques and cults was rejected by the organization that requested it, the **American Psychological Association**. No explanation was offered.

SEE ALSO Sensory Deprivation (1937), Choosing the Right Stuff (1958)

Laurence Harvey and Frank Sinatra filming a scene in Central Park for The Manchurian Candidate. *Photograph by Phil Stanziola, 1962.*

Gestalt Therapy

1951

Fritz Perls (1893–1970)

New York City was an exciting place for psychology in the decade after World War II. Psychoanalysts such as Karen Horney were active, Molly Harrower was doing exciting research on the therapeutic process, and Wilhelm Reich was building his "orgone accumulator." Into this mix came Fritz and Laura Perls, émigrés from South Africa.

Fritz Perls completed his medical training in Germany after World War I. Attracted to **Psychoanalysis**, he chose to be analyzed by Wilhelm Reich. In 1933, he and Laura (married since 1930) moved to South Africa to escape the Nazis. There they started a psychoanalytic training institute.

After moving to New York in 1948, the Perlses almost immediately began attracting young psychologists who were excited about the couple's new ideas for psychotherapy. This led to the book *Gestalt Therapy* (1951), as the Perlses were now calling their approach. (**Gestalt Psychology** and Gestalt therapy are not related.) Over the next twenty years, Gestalt therapy became an important variant of humanistic psychotherapy.

The basic orientation of Gestalt therapy is holistic: a person is viewed as a unity of mind, body, and spirit. Perls had been influenced in this by the work of Kurt Goldstein and by his exposure in South Africa to the holism of statesman Jan Smuts. Unlike psychoanalysis, Gestalt therapy calls for the patient to work on problems in the present moment without reference to an unconscious or to seminal childhood events. Personal responsibility is urged on the patient: he or she must take responsibility for his or her own actions rather than blaming others. A popular technique developed by Perls is the "empty chair," in which the patient engages with a person, imagined to be sitting in the chair, who figures in some important way in the patient's life. The goal of this and Gestalt therapy generally is to help the patient integrate his or her experience of the world into a meaningful whole.

SEE ALSO *The Organism* (1939), Logotherapy (1946), Humanistic Psychology (1961)

Paul Gauguin's Chair (The Empty Chair), *Vincent van Gogh, 1888, oil on canvas. The empty chair technique has been one of the most widely used techniques in Gestalt Therapy.*

Conformity and Independence

1951

Solomon Asch (1907–1996)

The events of World War II left many thoughtful people worried about the future of human freedom. Many Germans had cooperated with the Nazi regime in the effort to eradicate so-called undesirables. In the United States, massive resources were devoted to propaganda both at home and abroad to assuage fears and generate support for the war effort. For Solomon Asch, a young Jewish professor, these events raised questions about the importance of social influence on our ability to think for ourselves.

After the war, Asch's research turned to consensus building, independence of thought, and conformity, all considered within a social context. He published his first studies on conformity and independence in 1951. He later explained this body of work in a popular article written for *Scientific American* (1955): "Life in society requires consensus as an indispensable condition. But consensus, to be productive, requires that each individual contribute independently out of his experience and insight."

In order to examine the impact of social groups on independence and conformity of thought, Asch recruited male undergraduates for a study of perceptual judgment. Each subject was shown a line of a certain length and asked to choose which of three lines of varying lengths was the same as the original line (only one matched). Alone, the subjects were almost invariably correct, but when asked in the presence of other students, all of whom were working with Asch, 38 percent chose the incorrect line when the other students did so. Asch varied the conditions in several ways, including having one "partner" who agreed with the subject; this greatly reduced the errors, thus indicating that social support is important in maintaining independence despite group influence to conform.

Although the majority of textbooks describe Asch's research as conformity studies, Asch actually found greater support for independent thinking. His results also confirmed his theoretical work on the importance of understanding persons

within the context of the social field in which they make judgments.

SEE ALSO Gestalt Psychology (1912), Obedience (1963), Stanford Prison Experiment (1971)

The mass roll call of Nazi SA, SS, and NSKK troops in Nuremberg, Germany, on November 9, 1935, presents a startling image of conformity at its worst.

King Solomon's Ring

1952

Karl R. von Frisch (1886–1982), **Konrad Lorenz** (1903–1989), **Niko Tinbergen** (1907–1988)

Bees dancing, birds rolling eggs, fish making nests, and ducklings imprinting on a human "mother" are all fascinating contributions of a group of scientists who founded the field of ethology after World War II. Ethologists study fish, birds, insects, and mammals within an evolutionary framework; that is, they want to know how animal behavior is organized and what its function is in helping the animal survive.

In his book *King Solomon's Ring*, the first English-language edition of which was published in 1952, Austrian scientist Konrad Lorenz wrote about how he could talk to the animals, as Solomon did. His specialty was the relationship of mothers and their offspring. He discovered that if the first object that a duckling sees within a few hours of hatching is a human, then that person becomes the duckling's "mother." The animal has imprinted on the human and will follow him or her anywhere, just as it would a mother duck. Lorenz's work became very popular in the 1950s and 1960s, as mother-child relationships were of great concern to scientists, politicians, and the public. It was clear that early life experience was crucial in shaping the child.

Dutch ethologist Niko Tinbergen took a different tack by studying a variety of species, but he was best known for his innovative research on the stickleback fish. His research showed the complex chain of events that a male stickleback went through to woo a mate, build a nest, fertilize the roe, and defend the offspring. His message concerned the powerful role of instinct.

It had long been thought that honeybees did not see in color, but ethologist Karl von Frisch convincingly showed that they did. He then extended his work to study the movements of bees after they discovered a source of food. Von Frisch found that bees do different "dances" to indicate the location and distance of food to others in the hive.

These three scientists won the Nobel Prize in physiology or medicine in 1973 because of ethology's important implications for health and human society.

SEE ALSO *On the Origin of Species* (1859), Attachment Theory (1969)

Konrad Lorenz (left) and Nikolaas Tinbergen (right), 1978, from Max Planck Gesellschaft.

Christian Moullec flying with geese in Dahlem, Germany.

Antipsychotic Medications

1952

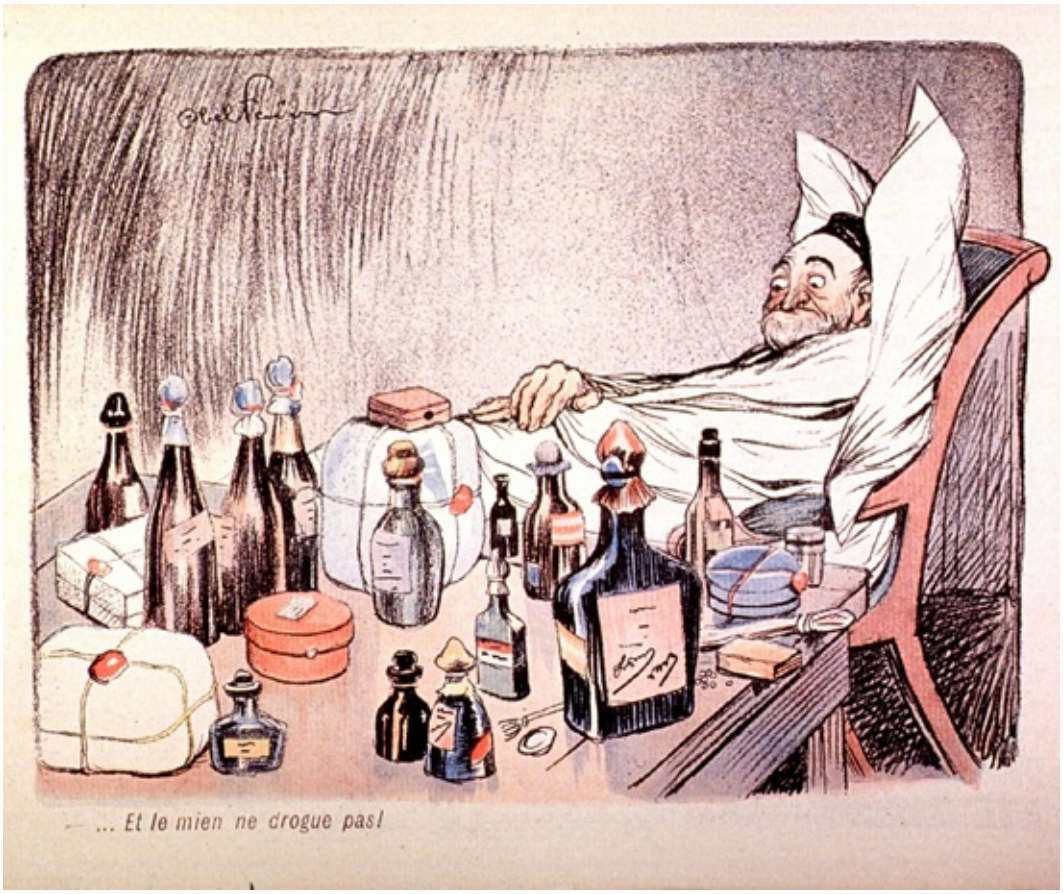
Henri-Marie Laborit (1914–1995)

The history of the care of the seriously mental ill is not a happy one. Various therapies have been tried over the centuries, from cold baths to malarial injections. In the 1930s and 1940s, insulin shock therapy and **Psychosurgery** were preferred treatments, but they achieved limited success. Medications included sedatives, barbiturates, and other drugs that relieved some symptoms, but they were particularly ineffective in the treatment of schizophrenia, bipolar disorder, and other serious mental illness.

In 1950, the French pharmaceutical firm Rhône-Poulenc synthesized chlorpromazine (Thorazine), originally for use as an antihistamine. However, clinical reports soon emerged that it was effective in quieting psychiatric patients without the side effect of excessive sedation. The first reports in English appeared in 1952, and by the mid-1950s it was clear that a pharmacologic revolution was occurring in the treatment of the mentally ill. Pharmaceutical companies rapidly created new compounds based on the success of chlorpromazine. At about the same time, reserpine was derived from the alkaloid *Rauwolfia serpentina* (snakeroot, or sarpagandha), which had been used for centuries in India. Like chlorpromazine, it appeared to be an effective treatment for mania and **Schizophrenia**. By the end of the 1950s, a number of new medications, such as monoamine oxidase inhibitors and imipramine, were developed that could effectively treat many of the symptoms of depression, mania, and schizophrenia, although not without side effects. By the early 1960s, the effectiveness of drug therapy was well established.

The development and use of these drugs had a major impact on the treatment of the seriously mental ill. The inpatient population of many large public and private mental hospitals was greatly reduced. From 1955 to 1980, the number of psychiatric patients in mental hospitals fell from over 500,000 to little more than 150,000. However, many of the discharged patients failed to maintain their drug regimens, and as a result many became homeless.

SEE ALSO Psychosurgery (1935), Electroshock Therapy (1938), Antianxiety Medications (1950), Antidepressant Medications (1957)



In this 1902 illustration by French artist Abel Faivre, a sick old man reclines next to a table filled with various pills and potions, complaining that none can cure him. Such was the case for patients with mental illness throughout most of history, until the advent of antipsychotics such as chlorpromazine.

Lives in Progress

1952

Robert W. White (1904–2001)

What is the best way to understand a human life? Psychologists have developed tests of intelligence, personality, and ability. When we look at the resulting numbers and scores, do we really know the person who took the test? Psychologist Robert White was not satisfied that human life could be measured by paper and pencil—or by computerized tests. Instead, he spent his career in the study of lives being lived. He published the first edition of his seminal book on the study of individual lives, *Lives in Progress,* in 1952; subsequent editions were published in 1966 and 1975.

White grew up in New England and was once described as "almost the last of a species of a proper New Englander." He was born into a well-to-do family, was loved by his parents, and was curious about the world. He had a deep passion for the humanities, especially history, but he chose to attend graduate school in psychology. He had the good fortune to enter Harvard's psychology program at just the time that Henry Murray, another unconventional thinker, became the head of the Harvard Psychological Clinic. Over the next few years White was joined by a remarkable group of students and colleagues, many of whom went on to become leaders in personality psychology.

White studied lives in their fullness—the unconscious determinants of present behavior did not concern him. He was more interested in peoples' perceptions of key turning points in their lives: What were their current interests? How had those interests developed or changed over time? How was competence displayed in life? White took individual lives seriously, and it showed in the case studies he produced. He wanted to know about the problems and questions that concerned ordinary people and to hear how they went about addressing them. Many of his case studies were longitudinal reviews of lives over time, so that we could understand where a person had been and where he or she was going. Perhaps no other psychologist has given us such profound insights into human lives and how to study them in all their richness.

SEE ALSO Thematic Apperception Test (1935), Positive Psychology (2000)

Stages of Man's Life, from the Cradle to the Grave, *a hand-colored print by Scottish artist James Baillie Fraser, c. 1848.*

The Case of H. M.

1953

Brenda Milner (b. 1918)

Henry Gustav Molaison was walking to school one day in 1935 when he was hit by a bicycle. He struck his head hard against the ground and was briefly knocked unconscious. However, when he came to, he seemed to be okay. Some years later Henry began having seizures, perhaps caused by the accident. The seizures grew so severe that in 1953 he underwent an experimental surgery in the hopes of reducing their severity. Parts of his hippocampus (which merges short-and long-term memory) and amygdala (which processes memory) were removed. After a period of recovery, he was able to get a job doing fairly simple tasks. It was at this point that his career as "H. M." began.

As H. M., Henry became perhaps the most famous neurological patient of all time. Psychologist Brenda Milner led a research team that frequently assessed H. M.'s memory and other cognitive abilities. From her work, we now know a great deal about the neurological underpinnings of the fundamental abilities of humans, especially learning and memory. Milner's work with H. M. not only described his peculiar memory deficits but their collaboration also helped us understand the different types and roles of memory.

H. M. could not remember a conversation once it ended or was interrupted. This reflected his lack of ability to form semantic memories—memories of everyday knowledge or of gaining new knowledge. He could remember many events from the time before his surgery, but not afterward; his short-term memory worked fine as well. Henry was also able to form new procedural memories—that is, memories of how to do things.

The amazing story of H. M. has taught us that different types of memory may be processed in different parts of the brain. But his story also tells us how important memory is for our everyday lives.

SEE ALSO Short-Term Memory (1956), Levels-of-Processing Model of Memory (1972)

Cell and Molecular Biological Approaches to Learning and Memory
Eric R. Kandel, M.D.
March 17, 1986 4:30pm Clinical Center Masur Auditorium A Lecture Sponsored by The Howard Hughes Medical Institute

A poster for American neuropsychiatrist Eric R. Kandel's 1986 lecture, "Cell and Molecular Biological Approaches to Learning and Memory." Like Milner, Kandel contributed much to our understanding of memory from a biological perspective.

Cocktail Party Effect

1953

Edward Colin Cherry (1914–1979)

Suppose you are at a crowded party. The noise level grows louder as the evening wears on, and in order to hear your conversation partner, you have to lean in and pay close attention to what he or she has to say. Yet somehow, in the midst of so many distractions, you overhear a conversation in which you and your spouse are the subject, even though the other conversation is taking place some distance away. This is an example of selective attention. Psychologist Edward Colin Cherry christened this the cocktail party effect in 1953.

Attention is one of the most important aspects of existence for humans and many animals. Without it, our memories would be extremely faulty, and our chance of survival would be low. Over the last 150 years, a number of thinkers and scientists have studied attention. It was not until after World War II, however, that the modern experimental study of attention took off. Colin Cherry studied how air traffic controllers made decisions about which information was critical even though they were hearing the voices of many pilots at once.

During the 1950s, British psychologist Donald Broadbent developed what he called the filter theory of attention. His theory attempted to explain how the brain handled the input of so much sensory information at one time. He proposed a filter between the sensory and perceptual systems in which the perceptual system screens out data that is not needed. Further research indicated that the filter model could not adequately account for the fact that the brain also seemed to register information that was not consciously attended to. Psychologist Anne Treisman developed an attenuation model in which information is weakened, but not blocked, by the attentional filter. Some sounds, such as one’s own name, are likely to be detected, even when one is not paying attention, such as during a crowded cocktail party.

SEE ALSO Short-Term Memory (1956), Levels-of-Processing Model of Memory (1972)

Two women share a laugh at a cocktail party. According to Cherry's theory of selective attention, they are more likely to overhear another conversation if one or both of their names are mentioned.

REM Sleep

1953

Eugene Aserinsky (1921–1998), **William Dement** (b. 1928)

Although all warm-blooded mammals dream every night, the laboratory-based study of sleep and dreams dates only from the twentieth century. By the 1930s, brain activity during sleep was measured by the new electroencephalogram (EEG) method, and rhythmic patterns were reported. However, it was not until 1953 that physiology graduate student Eugene Aserinsky identified the brain-wave pattern characterized by rapid movements of the eyes during sleep and correlated it with the state of dreaming. It was another graduate student, William Dement, who then developed the study of rapid eye movement (REM) sleep.

What scientists now know is that, during a normal night's sleep, humans cycle through stages, each with its own characteristic brain activity. In stage one, our brains show an alpha rhythm; we can easily awake in this stage and we often experience vivid images that are not dreams. Our sleep deepens in stage two, indicated by small bursts of brain activity. During stage three, the delta rhythm of slow, large brain waves emerges; when the brain-wave pattern is only delta waves, then we are in our deepest sleep, stage four, which lasts about twenty to thirty minutes. Then lights, action! We move into REM sleep. Our heart rate and breathing quicken, and our brain-wave patterns look like they do when we are awake; our eyes move rapidly back and forth behind our eyelids (hence the name REM). Even though all this activity is going on, it is impossible to move, as our skeletal muscles are paralyzed. The first period of REM is the shortest; with each cycle—and depending on how long one sleeps, there can be as many as four cycles per night—it lengthens.

While we need each stage of sleep, research shows that REM is the most important. It is not clear why this is the case, but it is known that loss of REM sleep leads to compromised immune function. On the positive side, there is evidence that our memories are consolidated during REM.

SEE ALSO *The Interpretation of Dreams* (1900), Jungian Psychology (1913), Psychical Discharges (1941)

The Nightmare *by Swiss-born painter Johann Heinrich Füssli, 1802.*

Pleasure and Pain Centers

1954

José Manuel Rodriguez Delgado (1915–2011), **James Olds** (1922–1976)

The discovery of specific brain locations for pain, rage, and pleasure astonished both scientists and the public in the 1950s. In 1954, psychologist James Olds reported the sensational results of his research on pleasure; in the same year, physiologist José Delgado reported the location of brain centers that could be stimulated to produce pain and rage. These developments indicated the possibility of a brave new world of mind and behavior control through brain control. Delgado eventually proclaimed the possibility of a "psychocivilized" society through these and other direct brain-control methods.

Prior to their work, it was generally thought that pleasure and pain were not localized in the brain but diffused throughout. Olds inserted very fine electrodes into the brain of a rat and, as he later reported, missed the area of the midbrain he intended to stimulate. Instead, he hit the hypothalamus. He noticed that the rat soon learned to prefer the place in the experimental chamber where the stimulation was received. Olds extended the research as he discovered that rats preferred the electrical shock more than they desired a food reward. Some rats would press a lever five thousand times an hour if they received a shock for each lever press!

Delgado, on the other hand, discovered pain centers that could stop behavior or evoke rage reactions. Whereas Olds's electrodes were connected by wires to the control, Delgado developed a remote-controlled "stimoreceiver" that enabled control of behavior from a distance. Rats, monkeys, cats, humans, and other animals were Delgado's subjects. In a famous demonstration in 1963 in his native Spain, Delgado implanted a stimoreceiver in the brain of a bull and, using the controller, stopped the bull's charge toward him.

These discoveries frightened many people, who saw in them the potential for mass control. Yet they have also taught us about the richness and complexity of

emotional reactions.

SEE ALSO Operant Chamber (1930), Sensory Deprivation (1937), Psychical Discharges (1941)

Bullfight at San Marcos Fair, Aguascalientes, Mexico, May 1, 2010. In Delgado's famous 1963 demonstration, the physiologist showed that it was possible to stop a bull's charge by simply pressing a button to stimulate the brain's pain centers.

Contact Hypothesis

1954

Gordon Allport (1897–1967)

One of the most enduring concepts in American social psychology is the contact hypothesis, which in its simplest form states that, under certain conditions, intergroup contact among groups that are different in some important dimension, such as skin color, ethnicity, or social class can reduce prejudice and produce more positive intergroup attitudes. More than seven hundred scientific studies have examined the concept since noted social psychologist Gordon Allport introduced it in 1954. What gave rise to such a fruitful social-science construct?

Right after the end of World War II, social scientists in New York City sought to demonstrate how their sciences could help solve real-life problems. One of the pressing problems was interracial housing in large urban areas. The war effort had brought many racial and ethnic minorities to large cities to work in factories, yet very little new housing was being constructed. After the war, tensions rose in regard to who would live where, since the usual pattern in America had been segregated housing. Social scientists saw this as an opportunity to do research that would inform policy while also shedding light on how to reduce racial discrimination and improve intergroup relations.

In New York and nearby cities, there was a rise in the number of housing developments that included both black and white residents. This created a natural laboratory that could help answer questions about contact between different racial groups. Researchers on these integrated projects found that tenants of both races reported a higher number of friendships with members of the other race, and whites had more favorable attitudes toward integrated housing. The researchers concluded that it was the experience of living in close contact with people of other races that led to the attitude change. It was this idea that Allport turned into the apt phrase “the contact hypothesis.”

SEE ALSO The Doll Studies (1943), Self-Fulfilling Prophecy (1948), Robbers Cave (1954)

IN THIS TEMPLE
AS IN THE HEARTS OF THE PEOPLE
FOR WHOM HE SAVED THE UNION
THE MEMORY OF ABRAHAM LINCOLN
IS ENSHRINED FOREVER

Leaders of the Civil Rights March on Washington, D.C., March 28, 1963, include: the Executive Director of the National Catholic Conference for Interracial Justice, Mathew Ahmann (far left); Chairman of the Demonstration Committee, Cleveland Robinson (seated with glasses); President of the American Jewish Congress, Rabbi Joachim Prinz (behind Robinson); and the veteran labor leader who helped to found the Brotherhood of Sleeping Car Porters, American Federation of Labor (AFL), and a former vice president of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), A. Philip Randolph (center, seated), who organized the demonstration. Their physical closeness and agreement on the question of civil rights for African Americans paints a hopeful picture of prejudice overcome by increased social and physical proximity between groups.

Robbers Cave (Intergroup Conflict)

1954

Muzafer Sherif (1906–1988)

What happens when you divide a group of boys into competing groups? What can the study of the boys tell us about human relations and conflict and competition between groups? These were questions raised by the Turkish-born social psychologist Muzafer Sherif while he was a professor in Oklahoma during the 1950s. He reported on this research in a seminal 1954 publication, *Intergroup Conflict and Cooperation.* Sherif was interested in how social norms are created and how such norms are related to cooperation, competition, and conflict. In the big picture, Sherif's research is considered critically important for understanding intergroup relations.

Twenty-two eleven-year-old boys were carefully screened to make sure they were psychologically normal and then divided into two groups of eleven boys each, the "Rattlers" and the "Eagles." Initially, the two groups were kept unaware of each other, with each group's cabin in a separate part of a summer camp near the Robbers Cave State Park in Oklahoma. The first phase of the experiment was designed to build camaraderie and a sense of an in-group. Thus the boys in each group quickly formed attachments with the other boys in their cabin. After strong connections were made, Sherif encouraged the two groups to compete with each other for prizes and a trophy. Sherif predicted that the rivalry would create prejudice between the two groups of boys, and this is indeed what happened. Boys in each group saw the boys in the other group as inferior. There were raids on the other's cabin, name calling, fights, and other hostile behavior. In the last part of the study, Sherif attempted to reduce the intergroup conflict by arranging for the two groups to work together on a project that was larger than either group could do by itself, such as repairing the camp's water supply. The collaboration not only reduced intergroup conflict but established a close bond that superseded the prior in-groups. Sherif concluded that it may take a large task that requires members of opposing sides to work together to effectively reduce conflict.

SEE ALSO Contact Hypothesis (1954)

A rusty tunnel through a stone wall at Robbers Cave State Park in Wilburton, Oklahoma, 2007.

Teaching Machine

1954

B. F. Skinner (1904–1990)

When Harvard psychologist B. F. Skinner attended Father's Day at his daughter's school in 1953, he witnessed an alarming scene. While sitting at the back of her fourth-grade math class, he observed students trying to solve an arithmetic problem as the teacher circulated among them. Some students had already solved the problem and were sitting idle while others struggled. None of the students received immediate feedback about his or her performance. For Skinner, this was a violation of two fundamental principles of effective teaching: give immediate feedback on right or wrong answers and ensure students are able to progress at their own pace. He decided to invent a machine that would "teach" based on these principles. His machine had its public debut in 1954 at an educational conference in Pittsburgh, Pennsylvania.

Skinner was certainly not the first to come up with the idea of a teaching machine. Fellow psychologist Sidney Pressey had demonstrated his version of such a device as early as 1924. Pressey's machine presented questions and a number of possible answers in a window. Students selected an answer by pressing a key. With the selection of the right answer, the student progressed to the next question. Skinner's machine, too, had questions, answers, and a key to press, but his innovation was to break down the material to be learned into small, sequential steps. Students did not need any prior exposure to the information in order to answer the first questions. The procedure, known as programmed instruction, practically guaranteed early success and minimized the probability of wrong answers.

Skinner's teaching machine was just one invention in an era marked by heightened enthusiasm for classroom technology in the United States. This interest was a response to many factors, including a concern about keeping up with the scientific and intellectual prowess of America's Cold War nemesis, the Soviet Union. The teaching machine, however, was not embraced enthusiastically by all. Some saw a dystopic vision of a future in which

mechanical teachers ruled the nation's classrooms. Skinner's teaching machine was used by some school districts but never had a wide adoption by American schools. By the end of the 1960s, the teaching-machine movement was largely over.

SEE ALSO *Rattus norvegicus* var. *albinus* (1929), Operant Chamber (1930), Token Economy (1961)

The teaching machine, designed by B. F. Skinner in 1954, brought programmed instruction into the classroom.

Cognitive Therapy

1955

Albert Ellis (1913–2007), **Aaron T. Beck** (b. 1921)

Since the mid-twentieth century, cognitive therapies have gained widespread acceptance as the treatment of choice for a variety of psychological problems. In the United States, Albert Ellis, a psychologist who had trained as a psychoanalyst, pioneered the first cognitive therapy, which he called rational emotive behavior therapy (REBT). Ellis initially chose **Psychoanalysis** as a way to understand the psychological dynamics of his childhood and help others unpack the childhood origins of their own unhappiness. By the early 1950s, however, he grew impatient with the slow pace of analysis and its constant focus on the past. Ellis began to concentrate instead on how people's thoughts and self-statements keep them trapped in their problems. He noted that people "musturbated"; that is, they irrationally focused on "musts," "shoulds," and "oughts." For example, young adults choose the wrong career because they *must* please their parents, or they engage in constant self-criticism because they *should* be loved by everyone, and they *ought* to make the right decisions always. REBT therapy uses methods such as thought disputation to challenge patients about their false beliefs. It asks questions such as, "Why must you always please your parents?" or "How is it possible that everyone would love you?" Through practice and homework assignments, the client is able to stop acting on irrational beliefs and construct new thought patterns.

A few years after Ellis introduced REBT, Aaron T. "Tim" Beck began publishing his first work on cognitive therapy. Beck, too, had begun his career as a psychoanalyst, but he failed to find research support for some of the key ideas in psychoanalysis. He gradually developed a cognitive approach that teaches patients to identify and challenge automatic but dysfunctional thoughts. Originally developed to treat depression, Beck's cognitive therapy has now been shown to be effective in dealing with a variety of mental disorders, such as anxiety and marital problems.

SEE ALSO Psychoanalysis (1899), Logotherapy (1946)

Cognitive therapy targets the frontal lobe of the brain, which is involved in the "executive functions" of planning for the future, judgment, decision-making skills, attention span, and inhibition.

Placebo Effect

1955

Henry K. Beecher (1904–1976)

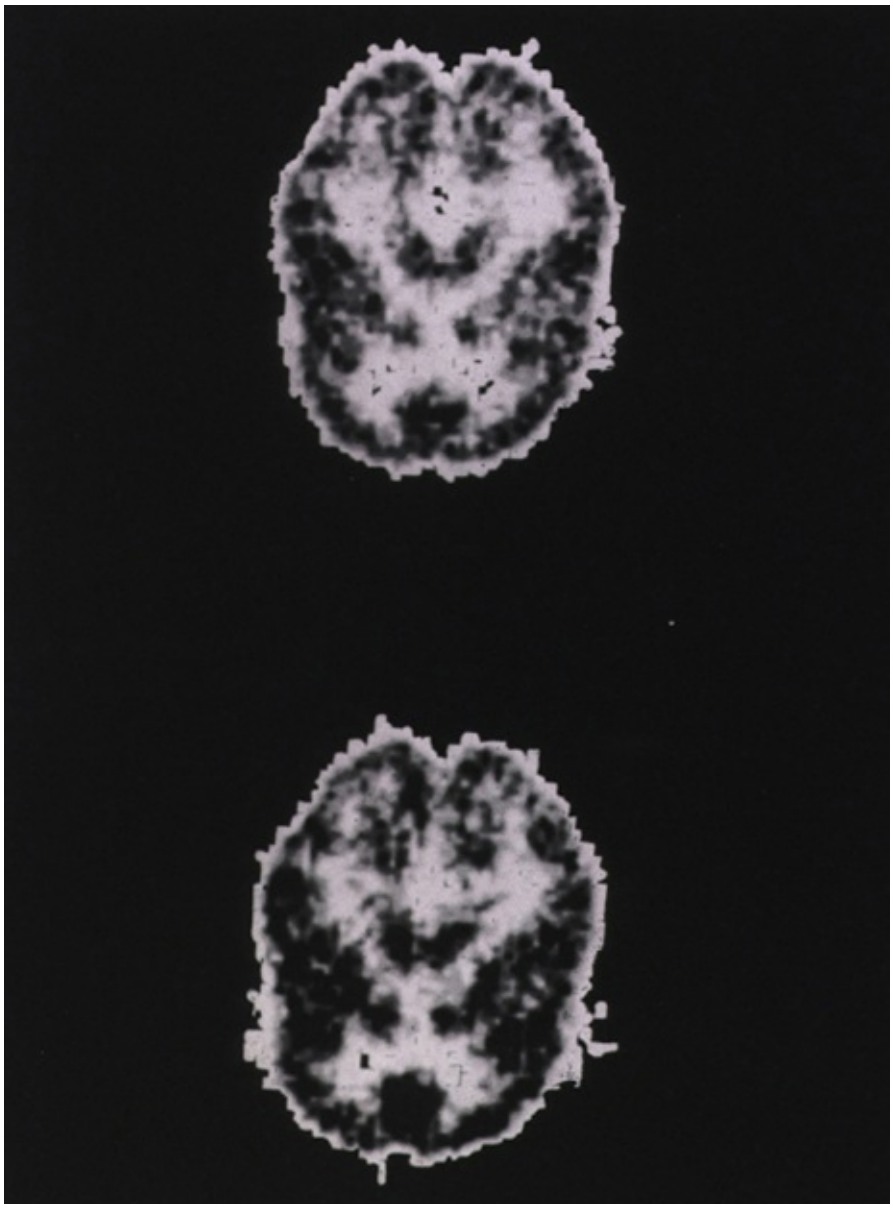
One of the most studied medical and psychological phenomena of the twentieth century was the placebo effect. The word *placebo* comes from the Latin word meaning “to please.” It has been defined as any treatment that contains no known or proven active curative agent, such as a prescription pill that is in fact inert, though the patient has been told it will be effective. The beneficial effect of receiving the placebo appears to stem from the expectation of improvement. Placebo effects have been found in the treatment of a wide range of medical and psychological conditions. Modern researchers have concluded that such placebo effects are normal or typical responses to treatment.

Although the placebo effect must surely have existed for millennia, its documented history in Western medicine dates from the eighteenth century. During the nineteenth century, the placebo effect was widely acknowledged as part of the physician’s armamentarium. The diverse nostrums prescribed by itinerant healers, phrenologists, and snake-oil salesmen in rural and pioneer America presumably relied on a similar mechanism of treatment to achieve some beneficial results for the patients who used them.

The serious study of placebos and the placebo effect can be dated from the publication of physician Henry K. Beecher’s “The Powerful Placebo” in the *Journal of the American Medical Association* (1955). The paper stimulated research that pointed to a psychological role in health and illness—such as Hans Selye’s theory on **Stress** or the linkage of coronary heart disease to what came to be called the **Type A Personality**—and gave a new impetus to the study of mind-body connections in health and disease. The placebo effect is thought to be important enough to be a necessary part of randomized controlled trials of all new medications.

SEE ALSO Mind-Cure (1859), Psychosomatic Medicine (1939), Type A Personality (1959), Psychoneuroimmunology (1975), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)

A portrait of Henry K. Beecher, 1955.



Two PET scans taken from a former opioid addict under the influence of morphine shows decreased brain activity (lighter tones) in the top scan as compared to activity in the same brain under the placebo (no drug) in the lower scan, 1980.

Short-Term Memory

1956

George A. Miller (1920–2012)

Memory has long been a staple of psychological study, from Aristotle and the ancient Greeks to Hermann Ebbinghaus and Mary Whiton Calkins in the late nineteenth century. However, it was the West Virginia–born, Harvard-educated psychologist George A. Miller who guided the study of memory into its contemporary direction with his information-processing theory of short-term memory. During World War II, Miller was a member of a large interdisciplinary group of mathematicians, physicists, engineers, linguists, and psychologists who sought to improve military communication. After the war, these interactions led him to think about how information theory could be applied to problems in psychology. His postwar research prompted other psychologists to take up an information-processing approach in the study of cognition, and it turned American psychology away from its behaviorist approach and toward the study of the mind.

The new models of the mind conceived of the brain as either a computer or as an entity that functioned like a computer. Like computers, the mind (or brain) processed information. For Miller, this model led him to think about how memory works; that is, how does the mind hold things in memory so that the information can be processed? As he wrote in the 1956 paper “The Magical Number Seven, Plus or Minus Two,” Miller said he was lately haunted by an integer, the number seven, for he had found that that number seemed to be the maximum number of things that humans could store in what was being called short-term memory.

Further research revealed that the limit was, in fact, not seven plus or minus two individual items; rather, separating information into chunks could extend the limit out well beyond seven. For example, American social security numbers, which most people easily remember, are made up of nine digits, but they are typically remembered as three chunks, or not even half the typical short-term memory span.

SEE ALSO Center for Cognitive Studies (1960), Levels-of-Processing Model of Memory (1972)

In his 1956 paper "The Magical Number Seven, Plus or Minus Two," Miller argued that the maximum number of things humans can store in short-term memory is seven. Further research showed people can remember more than seven digits if, like phone or social security numbers, they are divided into chunks.

Double Bind Theory

1956

Gregory Bateson (1904–1980)

A mother visits her son, recently diagnosed as schizophrenic, in the hospital. He hugs her, and she stiffens. He withdraws his contact, and she says, “Don’t you love me anymore?” What does this interaction mean?

(a) I am lovable.
(b) You should love me, and if you don’t you are bad or at fault.
(c) Whereas you did love me previously, you don’t any longer.

Gregory Bateson and his colleagues analyzed this kind of exchange between schizophrenic patients and their parents in Palo Alto, California, during the 1950s and published their now classic article, “Toward a Theory of Schizophrenia,” in 1956. Bateson, a cultural anthropologist, became interested in the communication patterns of families in which there was a child with **Schizophrenia**. He found that many such families put the child with the disease in a vulnerable place from which there was no easy solution or escape. Bateson called these interaction patterns the double bind.

Based on his observations, Bateson proposed that the disturbed communications of family members might contribute to an onset of schizophrenia. The disturbance came from the dual and conflicting messages that the person with schizophrenia received from a parent or close relative—messages that could not be ignored, yet there was no way to adequately respond to them. As in the example above, if a mother gives the dual message of love and withdrawal, what is the child to do? The messages are on two different but equally powerful levels—verbal and physical. This set up such an intense conflict within the child that a natural response could be withdrawal into a psychotic state.

The double-bind hypothesis of schizophrenia emerged at a time of great interest in the role of families in mental health and illness. Whatever its ultimate merits, Bateson’s theory was provocative and led therapists to think in new and

productive ways about treating families.

SEE ALSO The Schizophrenias (1908), Family Therapy (1950)

Jules Being Dried by His Mother *by American painter Mary Cassat, 1900. Bateson's controversial double bind theory put forth the idea that children who consistently receive mixed messages from a primary caregiver are at an increased risk for developing schizophrenia.*

Logic Theorist

1956

Herbert Simon (1916–2001), **Allen Newell** (1927–1992)

The development of computer programs that can perform complex, humanlike feats of problem solving has been the holy grail of cognitive scientists. In the 1950s, the partnership of scientist and researcher Allen Newell and political scientist Herbert Simon brought scientists closer to their goal. One of their breakthrough innovations was the computer program Logic Theorist, first presented at a conference in Dartmouth, New Hampshire, in 1956. This program sprang from Newell and Simon's determination to describe thinking people as information processors. To do so, they developed what they called protocol analysis, in which they presented research subjects with logic problems and asked them to think out loud as they solved them. They then analyzed these protocols to discern the rules and patterns their subjects used, and these insights guided their computer programming. They described their general approach as one in which artificial intelligence would borrow ideas from psychology and psychology would borrow ideas from artificial intelligence.

Logic Theorist was designed to generate proofs for some of the basic theorems in Alfred North Whitehead and Bertrand Russell's *Principia Mathematica* (1910, 1912, 1913), a landmark three-volume work on mathematical logic. When it actually generated a proof that was more elegant than the authors' own, Newell and Simon attempted to have it published in a journal under the authorship of Logic Theorist (the editors did not allow it). Newell and Simon improved upon Logic Theorist with the development of General Problem Solver, which was based on means-end analysis, a heuristic strategy in which the current state and end goal of any problem are systematically compared. The option that reduces the distance between the two is chosen at every step until the distance between the current state and the goal is zero. At the time, Simon confidently proclaimed that a computer would be the world champion in chess within the next ten years. Although it would actually take forty years, in 1997 the program Deep Blue did beat reigning champion

Garry Kasparov in a match that was televised around the world.

SEE ALSO Can Machines Think? (1843), Turing Machine (1937), Cybernetics (1943)

Mephisto Academy chess computer, 1989. In 1956, Simon confidently proclaimed that a computer would be the world champion in chess within the next ten years. In fact, it took forty years.

Antidepressant Medications

1957

Roland Kuhn (1912–2005)

In 1952, a drug under development for use with tuberculosis patients, iproniazid, was found to be effective in treating depression. Approved for use in 1958, it was withdrawn three years later when it was found to cause serious liver damage. In 1955, imipramine was being considered as a treatment for people suffering from schizophrenia at a mental hospital in Switzerland, but the results were not positive. Psychiatrist Roland Kuhn decided to try the drug on forty depressed patients, and the results were all positive. Patients became livelier, their voices were stronger, they were able to effectively communicate, and hypochondriacal complaints all but disappeared. He published his results in 1957.

Imipramine moved to the market under the brand name Tofranil. It was the first of what soon became a family of drugs labeled tricyclics (so named because of their three-ring chemical structure). Tricyclics work by inhibiting the reuptake of the neurotransmitters norepinephrine and, to a lesser degree, serotonin, thus initially making more of them available for use in the brain. There can be unpleasant side effects, however, such as dry mouth, constipation, weight gain, and sexual dysfunction.

Another antidepressant that also works by inhibition was discovered shortly after imipramine. The class of drugs known as monoamine oxidase inhibitors (MAOI) prevents the action of an enzyme, monoamine oxidase, which breaks down such neurotransmitters as serotonin and norepinephrine. MAOI side effects are even more dangerous than those of the tricyclics, so they are seldom prescribed today.

In 1987, a second-generation antidepressant with the trade name Prozac was approved for use by the US Food and Drug Administration. Prozac and other drugs like it are selective serotonin reuptake inhibitors (SSRIs). Just as their name implies, they inhibit the reuptake of serotonin in the synapse. The response has been phenomenal: within three years of its release, Prozac was the number-

one drug prescribed by psychiatrists, and by 1994 it was the number-two best-selling drug of any kind in the world. It does not have many of the side effects of other antidepressants. Indeed, it is used by millions of people who suffer from no mental disorder at all but who use the drug to enhance their personality, lose weight, or increase their attention spans.

SEE ALSO Antianxiety Medications (1950), Antipsychotic Medications (1952)

Many species of passionflower have been found to contain beta-carboline harmala alkaloids, which are MAO inhibitors with antidepressant properties.

Cognitive Dissonance

1957

Leon Festinger (1919–1989)

A major social-psychology theorist of the twentieth century, Leon Festinger made important contributions to how we manage our sense of self and to how we maintain consistency in our beliefs and attitudes. As a result of his research, the field of American social psychology became increasingly oriented toward internal, cognitive states to explain social phenomena. This was not the case elsewhere in the world. His main contribution to the cognitive turn in social psychology was his often-cited book *A Theory of Cognitive Dissonance* (1957).

Festinger grew up in New York City and earned his undergraduate degree at City College of New York, where the psychology department stressed an engagement with real-life applications. He then earned his graduate degrees at the University of Iowa and came under the influence of the Gestalt émigré psychologist Kurt Lewin. After World War II, Festinger worked with Lewin at the Massachusetts Institute of Technology (MIT) as a member of Lewin's innovative Research Center for Group Dynamics. Festinger's work in social psychology owes much to Lewin's Gestalt approach, especially the principle that the organism seeks to maintain a sense of social and cognitive balance.

Cognitive dissonance theory posits three basic assumptions. The first is that cognitions (or beliefs or attitudes) may be related to other beliefs. For example, "I am religious" is related to "I attend church regularly." The second assumption is that related beliefs may be contradictory; this is the basis for the emergence of cognitive dissonance. The third assumption is that humans are motivated to reduce dissonance, regain their cognitive balance, and restore the Gestalt.

When the degree of dissonance is great, as when important beliefs or self-perceptions are involved, we become highly motivated to reduce the dissonance. Festinger suggested that we do this by changing one of the dissonant beliefs or attitudes so that it is consistent with the other important related cognition. For example, you love basketball and you believe you are a very good player, but when you try out for your high school team, you don't make the cut. This creates

dissonance that you may try to reduce by telling yourself that basketball isn't so great after all.

SEE ALSO Conformity and Independence (1951), Fundamental Attribution Error (1958)

An engraving of "The Fox and the Grapes" from Aesop's Fables, 1879, illustrating the concept of cognitive dissonance. A limerick version of the fable reads: "This fox has a longing for grapes. He jumps, but the bunch still escapes. So he goes away sour; and, 'tis said, to this hour, declares that he's no taste for grapes."

The Age of Psychology

1957

Ernest Havemann (1912–1985)

In 1957, just before the inauguration of Dwight Eisenhower into his second presidential term, *Life* magazine featured a new series on the "Age of Psychology," written by the psychologist turned journalist Ernest Havemann—a series that was turned into a book later that same year. Why would America's favorite magazine devote so much attention to psychology?

The end of World War II brought both an economic boom and the baby boom. Suburban life became the norm, at least for middle-class white families. The "good life" was represented by the individual home on its own neighborhood lot, and it was filled with gadgets of every kind: toasters, vacuum cleaners (both uprights and sweepers), mixers, steam irons, percolators, electric frying pans, radios (console and transistor), refrigerators and freezers in amazing colors, every kind of power tool for the do-it-yourselfer (though few actually ever did much with them), and—above all—the television.

In these enclaves of modern (white) family life, there was intense anxiety and fear about the future in the aftermath of the use of atomic weapons. Americans got the "suburban jitters" as they became stressed by the demands of keeping up with the Joneses. Parents in the 1950s were concerned about juvenile delinquency, and many worried that their children would become social deviants because of television messages, rock and roll, and the emphasis on consumption.

This is the time when psychotherapy was incorporated into middle-class lives. Mental health, or at least the hope of it, became a purchasable commodity. At first, **Psychoanalysis** was the preferred treatment, but soon its expense and inherent pessimism about the human condition diminished its appeal. Those who sought out psychological help found that the new psychotherapies, such as those offered by humanistic or Gestalt therapists, were not radically different from what was heard in church on Sunday and were imbued with American optimism. With the waning of religious influence, psychologists offering such therapies stepped in as alternative guides to the good life. This was the age of psychology.

SEE ALSO Psychoanalysis (1899), Client-Centered Therapy (1947), Gestalt Therapy (1951)

This 1950s living room interior at Strawbery Banke Museum in Portsmouth, New Hampshire, features one of the era's defining representations of the "good life": the television set.

Subliminal Perception

1957

James M. Vicary (1915–1977)

In attempt to lose weight, TV cartoon character Homer Simpson purchases tapes with subliminal messages that are intended to help him. What Homer doesn't realize is that the tapes are actually vocabulary-building tapes. After a few days, the following exchange occurs between Homer and his wife, Marge:

> MARGE: Homer, has the weight-loss tape reduced your appetite?
> HOMER: Ah, lamentably no! My gastronomic rapacity knows no satiety.
> MARGE: I don't know if that tape is working. You ate three desserts tonight.
> HOMER: Forbearance is the watchword. That triumvirate of Twinkies merely overwhelmed my resolve.

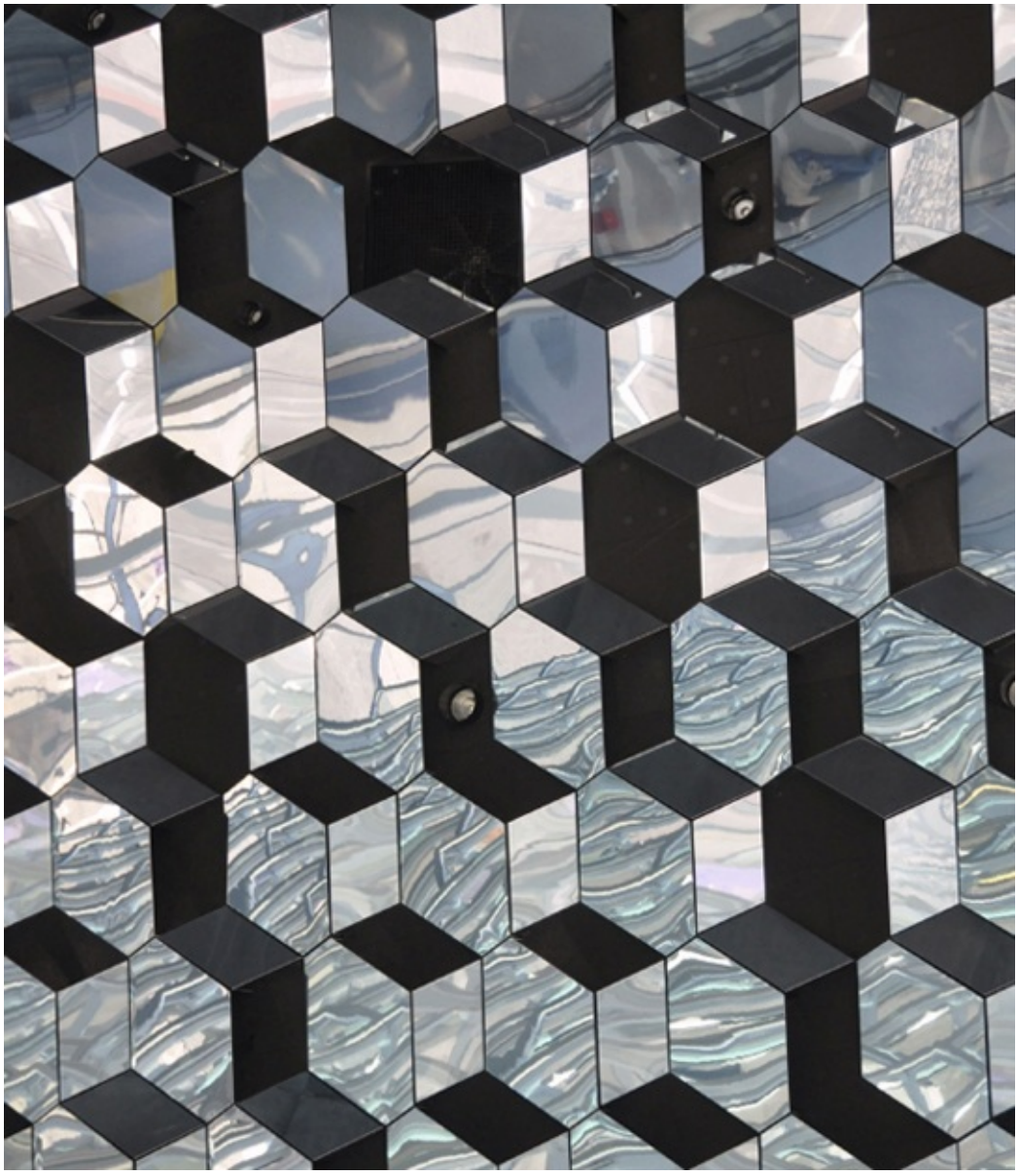
Can we lose weight or improve our vocabulary through subliminal messages? In 1957, marketer James Vicary claimed that he could influence consumption by inserting messages that were below the threshold of conscious awareness into movies. Supposedly these advertising messages increased the sale of the subliminally presented product. Even though Vicary's claim was exposed as fraudulent, millions of people since that time who have never heard the term *subliminal perception* think such ads exist and that they work.

Subliminal perception is perception without conscious awareness, but it has been very difficult to prove that it exists or that it works in any meaningful way. The scientific problem is that it is nearly impossible to prove that a message supposedly presented below the level of conscious awareness wasn't actually perceived by the subject, even though he or she may report not seeing or hearing it.

What about Homer and the self-help audiotape that improved his vocabulary? Currently, there are many such media meant to help a person improve his or her memory, stop smoking, lose weight, and so on. Typically, a person hears the lulling sound of waves on the beach or crickets softly chirping, but the real message is hidden "beneath" the overt sounds. Does this method work?

Unfortunately, no! Psychological research shows there is no evidence at all to indicate that this approach has any effect. The devil might be in the details, but he isn't hidden beneath the music of Ozzy Osbourne.

SEE ALSO Psychical Discharges (1941)



This wall of mirrors challenges us to discern their true orientation, much as a stack of three-dimensional cubes can be viewed as facing different directions in a two-dimensional image.

Homosexuality Is Not an Illness

1957

Evelyn Hooker (1907–1996)

Evelyn Gentry Hooker has been hailed as the psychologist who was the forerunner of the gay liberation movement. Conducted almost fifteen years before the 1969 Stonewall Riots in New York City ignited the movement in the United States, her study showing that homosexual men were indistinguishable from heterosexual men in terms of psychological adjustment would prove pivotal in changing both social and scientific attitudes about the "pathology" of homosexuality.

Self-described as "hopelessly heterosexual," Hooker was an instructor at the University of California, Los Angeles, in the early 1950s when she was approached by one of her students, Sam From. Sensing he could trust her, Sam confided that he and many of his friends were homosexual, and he implored her to do a scientific study to prove that they were not abnormal. She agreed, procured a research grant, and through contacts with homophile organizations, she was able to recruit a sample of thirty homosexual men. She administered interviews and tests, including the Rorschach and the **Thematic Apperception Test (TAT)**, both of which clinicians used widely at the time. She then recruited a matched sample of heterosexual men and administered the same tests. The test protocols for both groups were coded blindly and presented to a group of distinguished clinicians. Each clinician was presented with thirty matched pairs and asked to determine which was the protocol from the homosexual participant. The experts were unable to distinguish the protocols from one another.

Hooker made a presentation of her results at the 1955 meeting of the **American Psychological Association** and published them shortly thereafter, in 1957. Her work was instrumental in removing homosexuality from the *Diagnostic and Statistical Manual of Mental Disorders* in the 1970s, and she remained an active participant in the gay rights movement throughout her life.

SEE ALSO Projective Tests (1921), DSM-III (1980)

A rainbow banner is reflected onto the pavement during the Athens gay pride parade in 2009.

Fundamental Attribution Error

1958

Fritz Heider (1896–1988)

Beginning in the 1950s, American psychology underwent what is often called the cognitive revolution. Psychologist Fritz Heider's book *The Psychology of Interpersonal Relations* (1958) was immensely influential in directing social psychologists' attention to the attributions that people make about behavior. Subsequently, in the late 1960s, social psychologists began to focus on social cognition, including errors we make in our thinking about social interactions. One of the most often cited is the fundamental attribution error, which means that we typically attribute behavior either to internal characteristics (dispositions) or to the situation—that is, the external setting in which the behavior occurred. Research indicated that we most often attach the behavior of others to an internal character trait or enduring quality, even when the behavior is caused by the situation. On the other hand, we are much more likely to attribute the cause of our own behavior, especially our mistakes, to the situation. For example, when Americans read about a robbery, we usually explain the thief's behavior as a product of undesirable or even evil personality traits. We often fail to consider other explanations; for example, perhaps the theft was committed to obtain money to pay for an operation to save the life of the robber's child.

This principle forms part of a broader theory of attributions about social causality, and there are several possible explanations. For example, the just-world explanation argues that if failure is attributable to problems within a person, then it is easier for us to believe that people get what they deserve. This, in turn, gives us a greater sense of control over our lives, even though it often results in blaming the victim. If failure is attributable to situational factors, a more complex explanation is required; this may force us to consider that bad events happen because of structural factors in our society, which we may feel powerless to control.

The principle becomes even more complex when we consider that there are

important cultural differences. North Americans and western Europeans are more likely to attribute the causes of failure to dispositional factors. Conversely, people in societies that emphasize the importance of relationships and interdependence are much more likely to consider behavior a result of situational factors.

SEE ALSO Hawthorne Effect (1927), Conformity and Independence (1951), Cognitive Dissonance (1957)

The Modern War God, *an illustration by Samuel D. Ehrhart from a 1905 issue of Puck* Magazine, *shows a Jewish man dressed as Mars, the Roman god of war, decorated with symbols of money, standing in the doorway of a munitions store labeled "Marsheim Bellonaberg & Co." and "Ordnance Dept." Such racist caricatures reflect our tendency to ascribe behavior to fixed traits rather than*

situational factors.

(Surrogate) Mother Love

1958

Harry Harlow (1905–1981)

Researchers at the Primate Laboratory at the University of Wisconsin in the 1950s were surprised when the young monkeys they had raised in isolation proved to be nearly useless in their studies of intelligence. The monkeys often were unresponsive to stimulation when brought in for experiments, looking away or becoming despondent. Then researchers noticed that the monkeys clung to the cloth diapers placed in their cages to cushion the cold floors. Building on this observation, lab director Harry Harlow designed experiments intended to shed light on, as he put it, the "origin of the infant's love for his mother."

In the 1950s, Harlow created a series of experiments to test his ideas about the importance of bodily contact, affection, and love. He published his first full account of these studies in 1958 in the journal *American Psychologist.* Two wire "mothers"—one bare, one covered in terry cloth—were created, each with a nipple for nursing. Eight newborn monkeys were given equal individual access to both mothers, with four being fed by the bare-wire mother and four fed by the terry-cloth-covered mother. There were no feeding differences between the two groups—the baby monkeys gained weight and grew regardless of which mother fed them; however, there were important differences in the psychological responses to the mothers. All eight monkeys spent much more of their time with the cloth-covered mother, and the amount only increased as they grew older. The dominant theories of the time predicted that the infants would spend more time with the mother that was the source of food, but Harlow showed that contact comfort was perhaps more important for bonding, attachment, and love.

In further experiments, Harlow found that the soft surrogate mother was an important refuge when the babies were frightened and seemed to serve as a secure base from which the infants could explore their environments. These findings complemented contemporaneous research on attachment by John Bowlby and Mary Ainsworth. Truly, love consists of more than nourishment.

SEE ALSO Failure to Thrive (1945), Attachment Theory (1969), The Strange Situation (1969)

Harlow's experiments in the 1950s showed that baby monkeys require contact comfort for maternal attachment.

Moral Development

1958

Lawrence Kohlberg (1927–1987)

We all must make moral choices in life. Psychologist Larry Kohlberg, who clearly articulated the development of moral judgment, had spent time helping to smuggle Jewish refugees into the British-controlled Palestinian territory. He did so because he believed that helping to establish a Jewish state served a higher moral purpose than obeying British law.

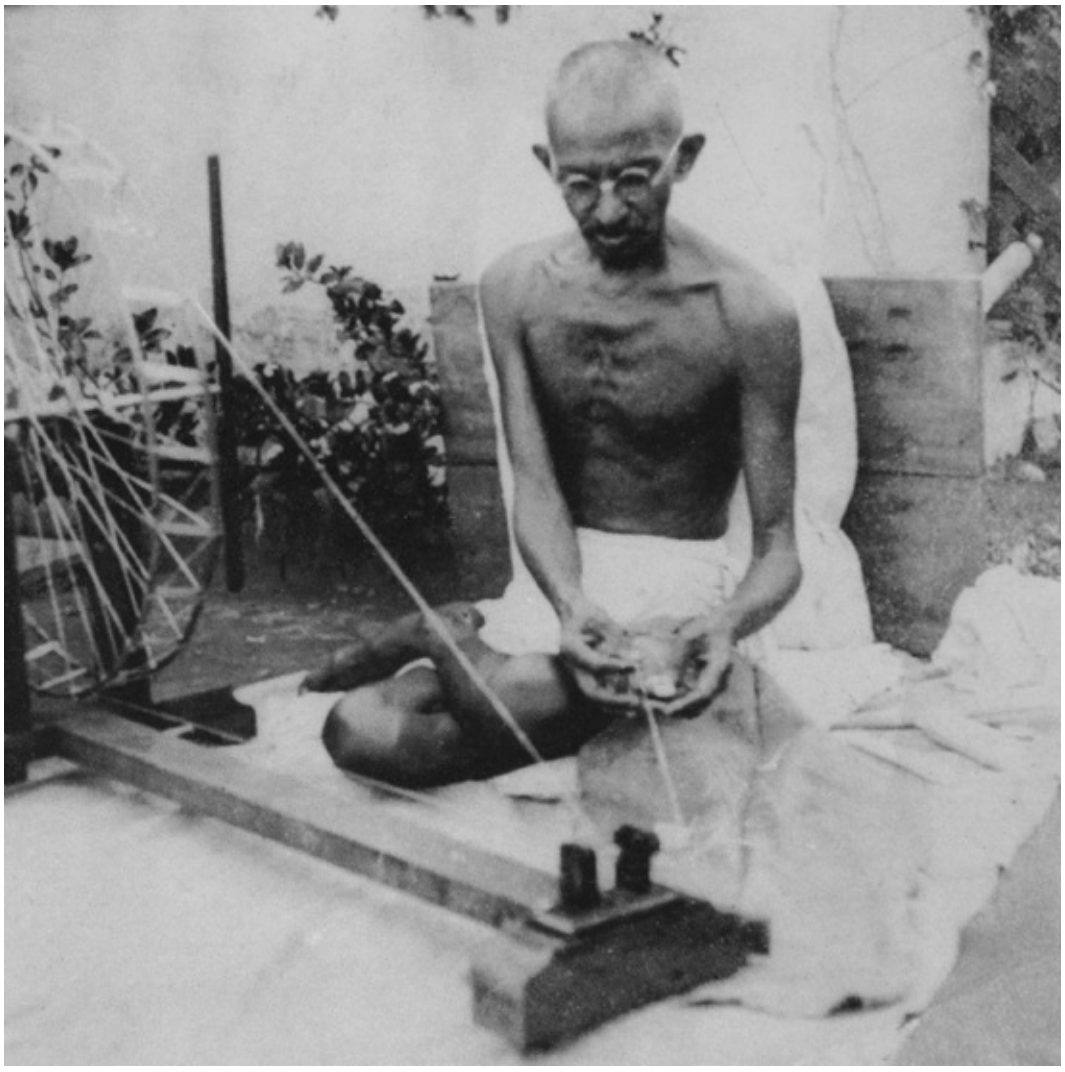
Kohlberg devoted his life to understanding how moral principles develop. In his 1958 doctoral dissertation, he first reported his studies of how humans resolve moral dilemmas. He then spent the rest of his career exploring the implications of his theory. He presented moral dilemmas to people of different ages and then analyzed their responses. His classic moral dilemma was the following:

> Heinz's wife is near death from cancer. A local druggist has invented a drug that could save her life, but is charging $2,000 for it, ten times what it cost him to make it. Should Heinz steal the drug to save the life of his wife or should he obey the law and let his wife die for lack of the drug? Why or why not?

Analyses of participants' responses led Kohlberg to argue that moral development proceeds through six stages. Young children use preconventional reasoning marked by an emphasis on avoiding punishments and getting rewards. The first stage is oriented to punishment and obedience, and its most important value is obedience in order to avoid punishment. In stage two, reasoning is based on taking care of one's own needs. Adolescents and most adults develop conventional moral reasoning that emphasizes social rules: the next two stages proceed from defining moral behavior as that which pleases others (stage three) to defining it as being a good citizen who obeys the law (stage four). Finally, some adults develop postconventional moral judgment: this has two stages,

beginning with morality based on a social contract that is always negotiable (stage five). Universal ethical principles are the basis of the highest form of moral judgment (stage six). Here a person is guided by values that transcend law and social convention; Gandhi and Martin Luther King Jr. are two examples of this highest stage. Although Kohlberg's last stage is not recognized by all his peers, it has led to further studies of the highest levels of moral reasoning.

SEE ALSO Genetic Epistemology (1926), Ecological Systems Theory (1979)



Gandhi, who reached Kohlberg's highest stage of moral development, uses a spinning wheel in this late 1920s photograph.

Choosing the Right Stuff

1958

George E. Ruff, Jr. (b. 1928)

In quick succession, the Soviet Union launched two cosmonauts into outer space in October and November of 1957. These events stunned the United States and led to a never-before-seen emphasis on science education in the nation's schools. The Soviet Union's success in manned spaceflight also galvanized the American space program, which at the time was only in the planning stage. President Dwight D. Eisenhower established a civilian space agency, the National Aeronautics and Space Administration (NASA), and by decree ruled that only military pilots were eligible for selection as astronauts. The initiative was called Project Mercury.

How would these astronauts be selected? In early 1958, it was decided that the basic criterion would be 1,500 or more hours of flying jet aircraft; 110 pilots met this condition. NASA also decided that all candidates would undergo rigorous medical and psychological testing. Psychiatrist George Ruff was placed in charge of the latter. The medical testing was conducted in New Mexico, and the psychological testing was done at the Aeromedical Research Laboratory (AMRL) in Dayton, Ohio.

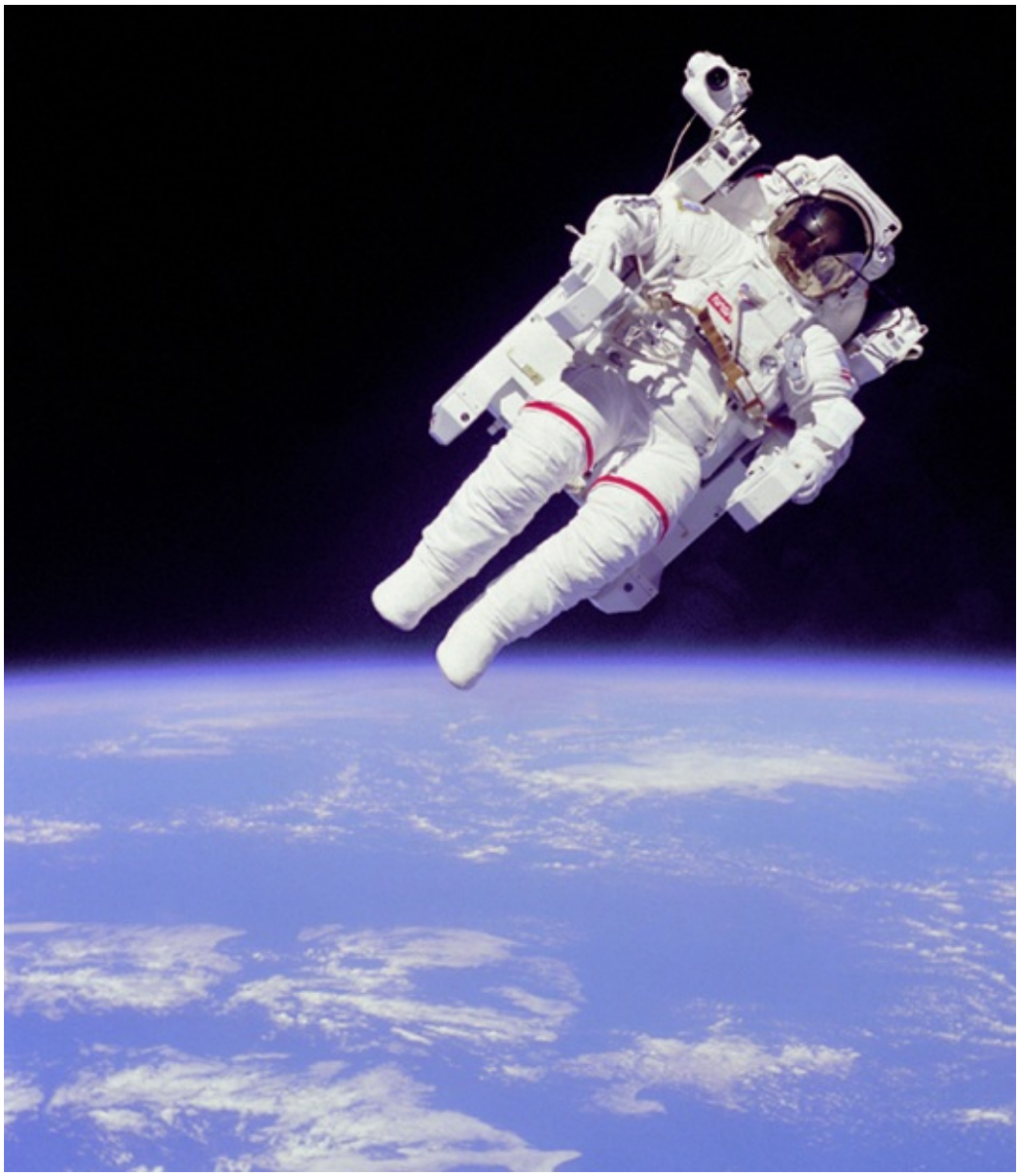
Ruff and his team decided they had four basic tasks: establish the job requirements, decide which personal characteristics were required, determine which assessment tools to use, and, finally, validate their selection process. They agreed that each candidate would be rated in seventeen psychological categories; for example, the pilots were to be tested for how they handled stress and for their adaptability, defensiveness, and impulsivity.

How should performance on these categories be measured? Ruff and his colleagues decided on thirty-one assessments plus two psychiatric interviews. Personality and motivation were assessed by a mixture of tests, including the Rorschach **Projective Test**, the **Thematic Apperception Test**, the **Minnesota Multiphasic Personality Inventory**, and ten other tests. Intellectual abilities and specific aptitudes were gauged using the Wechsler Adult Intelligence Scale,

the Miller Analogies Test, the Spatial Orientation Test, plus nine additional tests. Each candidate also had to do well in trials involving stresses such as sensory deprivation, acceleration, and heat.

Based on this battery of tests, NASA chose only seven of the 110 eligible men. They had the right stuff.

SEE ALSO Projective Tests (1921), Thematic Apperception Test (1935), Sensory Deprivation (1937), Stress (1950)



Astronaut Bruce McCandless II demonstrates the Manned Maneuvering Unit (MMU) outside the shuttle Challenger in February 1984.

Systematic Desensitization

1958

Mary Cover Jones (1897–1987), **Joseph Wolpe** (1915–1997)

In 1924, American developmental psychologist Mary Cover Jones published her test of a variety of strategies to reduce a young child's fear of a white rabbit. She discovered that the strategy of direct conditioning was most effective. In this technique, a pleasant, relaxing stimulus (such as food) was presented simultaneously with the rabbit. As the rabbit was gradually brought closer in the presence of the child's favorite food, the child grew more tolerant and was eventually able to touch it without fear. For many years Jones's work was forgotten.

In the 1950s, Joseph Wolpe, a South African physician, began developing systematic desensitization to treat anxiety disorders. Frustrated with the slow progress of talk therapy, Wolpe thought that he could "countercondition" anxiety by pairing it with a stimulus or activity that was incompatible with the feeling of anxiety. He initially called this treatment "psychotherapy by reciprocal inhibition"—his book of the same name was published in 1958—but today the technique is known as systematic desensitization.

Systematic desensitization helps people gradually lose their fears using the reciprocal inhibition method. Progressive muscle relaxation, pioneered by physician Edmund Jacobson in 1938, is used as the countercondition. The patient is first trained to relax and to maintain the relaxed state. The feared object, thought, or situation is then presented in its mildest, most nonthreatening form. As the patient is able to maintain the relaxed state, the next least-threatening form of the fear or anxiety is presented. This continues, usually over a number of sessions, until the person can actually encounter the fear or anxiety stimulus in its previously most threatening form and still remain relaxed. The patient is said to have unlearned the fear.

After Wolpe developed this method, he and other behavior therapists discovered that the technique of systematic desensitization had actually been formulated much earlier by Jones. For her early work, Jones was christened "the

mother of behavior therapy.”

SEE ALSO Classical Conditioning (1903), Operant Chamber (1930), Token Economy (1961)

Systemic desensitization allows people to gradually overcome phobias, such as acrophobia (fear of heights), using the reciprocal inhibition method.

Type A Personality

1959

Meyer Friedman (1910–2001), **Ray Rosenman** (1921–2013)

In 1959, two cardiologists reported their observation that many of their male patients exhibited similar behaviors: while at the doctors' offices, the men were impatient, time conscious, anxious, driven to achieve, and very focused on work—typical, one might think, of the corporate culture of the day. What alerted Rosenman and Friedman to pay attention to these men's behaviors was that they had to frequently replace their medical-office furniture due to the damage these men inflicted on it. The cardiologists followed the progress of these men in regard to coronary heart disease (CHD) and began to suspect that behavioral and psychological factors were linked to the men's heart problems. The pattern was labeled the type A behavior pattern, and by the early 1970s the construct began to be widely investigated.

This discovery occurred at a time when new attention was being paid to lifestyle and health in American culture. By the 1960s the primary causes of mortality and disability were CHD, cancer, stroke, and accidents; these diseases were costly in both personal and public ways. Health research was beginning to show that many diseases had important behavioral and psychological components. If unhealthy behaviors could be changed and personality modified, then the nation would benefit. CHD was paradigmatic for the shift to a more holistic view of health and the need for psychological expertise in research and treatment. Type A behaviors caught the public's imagination as a way to think about the relationship between mind and health.

Research initially indicated a link between heart disease and the type A behaviors of time urgency, excessive need to achieve, and anxious hostility. Further research narrowed the behavioral and psychological factors down to just hostility, which is manageable through psychotherapy, thus offering another role for psychologists in the treatment of CHD.

SEE ALSO Stress (1950), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)

A constant sense of time urgency is one of the key characteristics of Type A personality.

The Presentation of Self in Everyday Life

1959

Erving Goffman (1922–1982)

In his 1983 film Zelig, Woody Allen plays Leonard Zelig, who has the uncanny ability to present himself as being just like those around him. Whatever the sources of Allen's ideas for the movie were, his thesis fits with the one proposed by sociologist Erving Goffman in his 1959 book, *The Presentation of Self in Everyday Life.* Goffman drew upon earlier theories of the self, such as those presented by social scientists George Herbert Mead and Charles Cooley, which argued that the self is a product of social interaction. Goffman proposed what he called a dramaturgical (or theatrical) model of social life. In his model, our social identities consist of the various roles that we play. One of the goals we each have is to present our various selves in ways that help us manage the impressions that we make on others; especially important is the public image that we want others to believe. This, Goffman argued, is what guides our social interactions. We live our lives as if on a stage, so that our social interactions become performances. We may want others to believe we are humble or intelligent or that we have any one of thousands of other attributes, regardless of whether we actually do. This becomes our "face"—the image of ourselves that we want others to believe. Because it is an interaction, others must collaborate with us to make our claims believable, just as we collaborate with others as they present their faces.

Goffman's argument is compelling and has influenced scholars in multiple disciplines. For example, cultural historians have studied how Italian scientists in Renaissance Florence carefully managed their self-presentation at the Medici court in order to obtain patronage for their scientific projects. Moving from Goffman's period to our own, psychological research has explored the many implications of Goffman's theory in reference to self-consciousness, self-handicapping, and impression management.

SEE ALSO Identity Crisis (1950), Social Identity Theory (1979)

Former First Lady Eleanor Roosevelt on Meet the Press *in New York City, September 16, 1956.*

Burnout

1960

Graham Greene (1904–1991), **Herbert Freudenberger** (1926–1999)

In his novel *A Burnt-Out Case* (1960), English author Graham Greene tells the story of an architect suffering from stress and loss of religious faith who attempts to find meaning through working in a leper colony; fourteen years after the novel was published, psychologist Herbert Freudenberger borrowed the title to describe the state of exhaustion that may come from overcommitment and overwork in professional life. Appearing in an era marked by increased attention to **Stress** and its relation to health, burnout became a term widely used by both health professionals and the lay public. It appears to be most common in the helping professions. While it usually occurs in relation to work, it can also occur wherever there is intense interpersonal stress, such as in caring for others who are terminally ill. It appears in the list of disorders described in the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10), but it is not recognized in the American Psychiatric Association's DSM-5.

Burnout has been intensively researched and discussed by scientists and mental health providers. Psychologist Christina Maslach was among the first to systematically study burnout, beginning in the 1970s. She and her colleagues have found that the experience of burnout involves emotional exhaustion, depersonalization, and inefficacy. The first dimension refers to the sense that one's emotional resources have been used up, the second dimension reflects an emerging cynicism and callousness toward coworkers or clients, and the third indicates a sense that one is no longer capable of professional or personal functioning at an appropriate level.

Research indicates that burnout is most likely to occur whenever a person has unrealistic expectations of performance combined with lack of adequate support or positive feedback from superiors or clients. Effective interventions include

increased social support from peers, increased resources to handle demands, exercise, hobbies, and friends with whom one can talk. It is a condition of contemporary life that demands effective coping strategies.

SEE ALSO Stress (1950), Resilience (1973), Hardiness (1979)

Burnout, which results from overcommitment and overwork in professional life, occurs most commonly in the helping professions, although it can also occur wherever there is intense interpersonal stress, such as caring for an aging parent or ill spouse.

The Visual Cliff

1960

Eleanor Jack Gibson (1910–2002)

Is our ability to perceive depth innate, or do we learn it by experience? Does its method of movement influence the way an animal perceives the world? In a series of elegant experiments, psychologist Eleanor J. “Jackie” Gibson laid the groundwork for the contemporary science of perceptual development; she is best known for her study of the visual cliff, published as a popular article in *Scientific American* in 1960.

With her colleague Richard Walk, she devised an experiment to test whether experience plays a role in depth perception. The near side of the visual cliff was a board painted like a checkerboard, and a flat panel of thick glass was placed on top of it. On the far side of the cliff, a checkerboard floor was placed one foot lower, though the heavy glass continued the entire length, giving it a visual sense of depth, like a cliff.

Gibson and Walk tested whether human infants, as well as the young of several other species, would crawl out onto or cross the visual cliff. The thirty-six human babies tested ranged from six to fourteen months old, all of them crawling. The babies were placed in the center of the board and the mothers called to them from either the “shallow” side or the “deep” side. Most of the babies moved from the center at their mother’s call, but only three moved in the direction of the deep side. Many of the infants peered down on the deep side, even patting the glass, but refused to move out onto it. Gibson and Walk concluded that depth perception emerges about the time that babies learn to crawl. Thus experience probably plays only a minor role in depth perception. Research with other animals confirmed that depth perception is linked to the emergence of mobility.

SEE ALSO Growth Studies (1927)

This photograph shows a baby crawling on top of the "visual cliff," designed by Eleanor Gibson and Richard Walk at Cornell University in 1960.

Center for Cognitive Studies

1960

Jerome Bruner (b. 1915), **George A. Miller** (1920–2012)

The two scientists who stirred up the staid, stick-in-the-mud psychology department at Harvard University in the mid-twentieth century were individuals who knew how to think outside the box. Both Jerome Bruner and George Miller earned doctoral degrees in psychology from Harvard, and both then sought out other experiences, Bruner in England and Miller at the Center for Advanced Study in the Behavioral Sciences at Stanford University. Another common thread was that both had been part of an interdisciplinary team doing research for the US military during World War II.

In 1960, Bruner and Miller joined together to found the Center for Cognitive Studies at Harvard with money provided by the Carnegie Foundation; the center was located in what had been the family home of psychologist William James. The interdisciplinary experience of Bruner and Miller was replicated at the center. Psychologists came from several subfields, including developmental and experimental psychology. Anthropology, linguistics, and the new field of artificial intelligence were represented, as were law, history, art history, and sociology. What bound them together was a common interest in understanding humans. Weekly colloquia attracted some of the leading thinkers of the era from all over the world.

The center's major contribution was that it helped return psychology to the study of the mind. American psychology, in particular, had become far removed from human experience through an overemphasis on the study of behavior. Within a decade of the center's founding, the first textbook in cognitive psychology had been published, and Americans had rediscovered Jean Piaget's seminal studies of human reasoning. Bruner and Miller, one might say, pioneered the practice of thinking outside the (disciplinary) box.

SEE ALSO Genetic Epistemology (1926), Cybernetics (1943)

The site of the Center for Cognitive Studies: William James's former home, 95 Irving Street, Cambridge, Massachusetts.

Enriched Environments

1961

David Krech (1909–1977), **Mark Rosenzweig** (1922–2009)

In terms of intelligence, does it matter what kind of environment children grow up in? Most people today would say of course it does, but in the mid-twentieth century the majority of psychologists held the idea that environment did not much matter. Intelligence was due mostly to inherited ability. By the 1950s, a small group of researchers were beginning to challenge the older belief in fixed intelligence.

Canadian psychologist Donald Hebb had written that standard laboratory rats raised at his home had performed much better on tests than similar rats raised in the lab. Hebb's report piqued the interest of two younger scientists, David Krech and Mark Rosenzweig. They began a research project in the 1950s that examined the impact of what they called enriched environments on the neural connections in the brain. Krech and Rosenzweig invited the biochemist Edward Bennett and the neuroanatomist Marian Diamond to join them.

Building on Hebb's notes on "home-schooled" rats, Krech and his colleagues raised rats in two conditions. The control group received standard laboratory care, which simply meant they were housed together prior to any experimentation. The rats in the experimental group were placed in cages that had multiple toys and opportunities to engage in play—an enriched environment—before undergoing standard problem-solving tests. Upon autopsy, the brains of rats in both groups were sectioned in order to examine the number of neural connections.

The first full account of their results was published in 1961. They indicated that the rats raised in the enriched environment had many more neural connections than the rats that had only experienced standard laboratory environments. This work coincided with other findings of the time that indicate that environment and experience (or nurture) could make crucial differences in intelligence. Along with other studies, the research of Krech and his colleagues contributed to the founding of **Head Start**.

SEE ALSO Behavior Genetics (1942), Head Start (1965)

Two girls play the piano in this Federal Security Agency photograph. Studies show that in such "enriched" environments, more neural connections form in the brain.

Token Economy

1961

Teodoro Ayllon (b. 1929), **Nathan Azrin** (b. 1930)

The basic principles of the token economy have been in place for centuries. The idea of working for a paper bill or metal coin that can then be exchanged for goods and services is, in essence, a token economy. However, the idea of implementing token economies to promote specific, positive behavior changes was first developed systematically in psychology by Teodoro Ayllon and Nathan Azrin in 1961 at Anna State Hospital in Illinois.

Ayllon and Azrin were behavioral psychologists trained in operant psychology, a system developed by B. F. Skinner. Ayllon and Azrin implemented the first token economy to help hospitalized schizophrenic patients develop more functional behaviors on a psychiatric ward. Simply put, a token economy is an intentionally designed system in which a desired behavior is followed by a token reinforcer. This token reinforcer might take the form of points or poker chips that, although intrinsically valueless, can be exchanged for primary reinforcers such as toys, food, or privileges.

The token economy quickly spread and was used not only in hospitals but also in classrooms, prisons, and many other institutional settings. The use of token economies with vulnerable populations, such as prisoners and psychiatric patients, came under intense scrutiny in the early 1970s, especially in the federal prison system in the United States. Attracting criticism was the practice of withholding prisoners' basic rights, such as daily showers and access to the outdoors, and instead designating them as privileges to be earned through good behavior. Although token economies peaked in this period and then declined in terms of widespread use, forms of them are used today for many kinds of behavioral difficulties and challenges, especially with children.

SEE ALSO *Rattus norvegicus* var. *albinus* (1929), Operant Chamber (1930), Teaching Machine (1954)

Poker chips and cards—reinforcers exchanged for toys, food, or privileges in psychiatric wards in order to promote positive behavior during the 1960s.

Biofeedback

1961

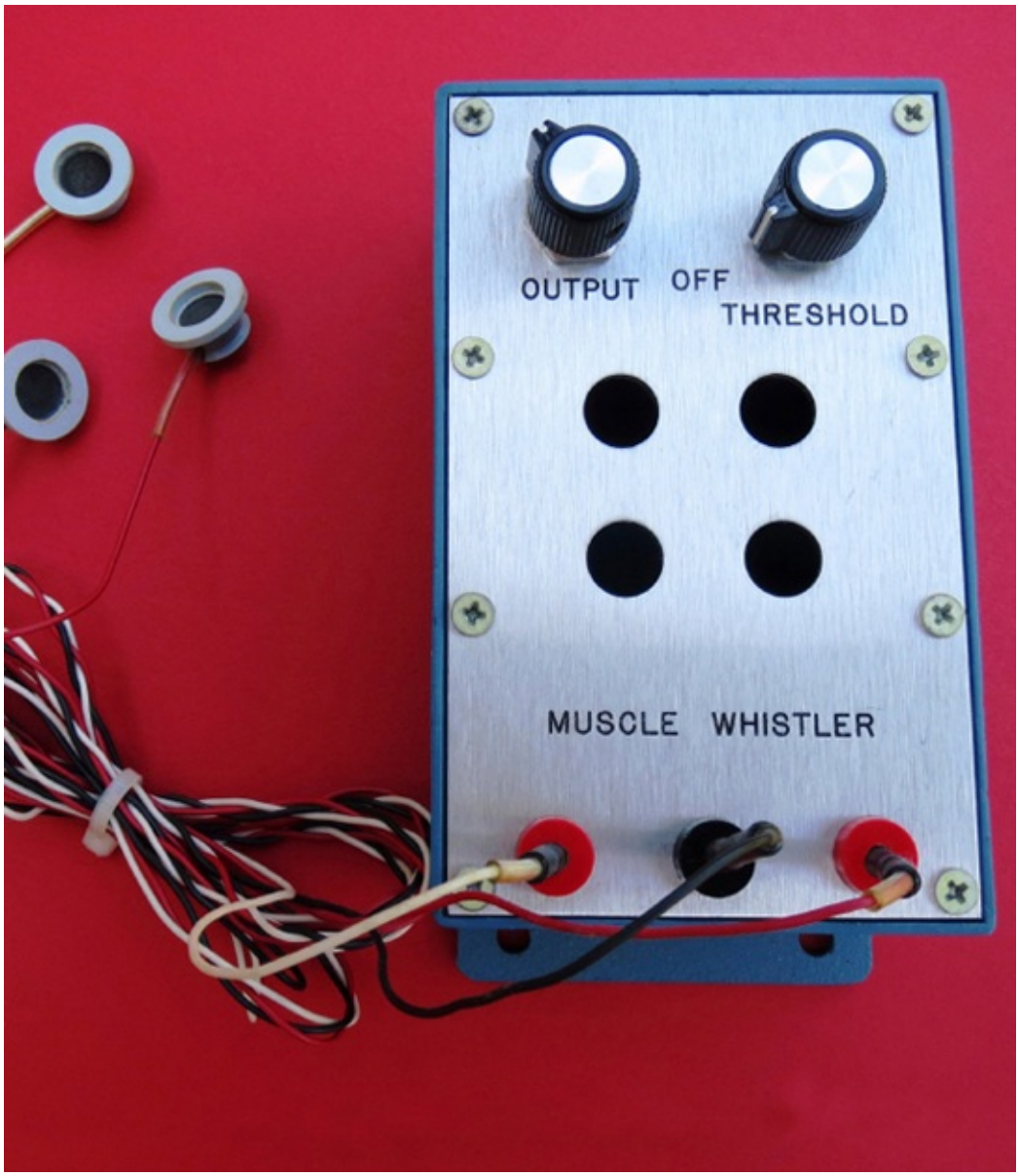
Neal E. Miller (1909–2002)

In 1961, noted psychological scientist Neal Miller made the startling claim that people could learn how to control the autonomic nervous system, which regulates most bodily processes without our conscious control, so that it would be possible to manipulate such basic functions as heart rate or even bowel movements. In the words of a colleague at the time, Miller's claim left "his audiences aghast. He was a respected researcher, director of a laboratory at Yale, but this was a kind of scientific heresy. Everyone 'knew' that the autonomic nervous system was precisely that: automatic, beyond our control."

Miller's claim grew out of his research on electrical stimulation of the brain's hunger and thirst centers. The potential human applications of his findings led to the development of biofeedback technology, based on the underlying theory that involuntary bodily processes are amenable to training through the use of rewards. By the late 1960s, biofeedback devices had been created that use electrodes placed on the body to provide feedback on blood pressure, heart rate, muscle tension, body temperature, and breathing patterns. A person wearing these electrodes is then guided through a series of relaxation techniques that may include breathing rhythmically or using visualization techniques. Physiological feedback is continuously provided on a video monitor as the person relaxes, so that the person learns which mental activities will produce the desired result—for example, reduced heart rate or body temperature. Over time, the person learns how to produce the desired results without external devices.

Biofeedback has become part of the tool kit of **Mind-Body Medicine** and is related to mindfulness meditation, relaxation training, and guided imagery. It has been found to be an effective part of the treatment for chronic pain management, migraines, hypertension, asthma, anxiety, ADHD, and many other conditions.

SEE ALSO Buddha's Four Noble Truths (528 BCE), Mind-Body Medicine (1993)



The Muscle Whistler was an early biofeedback device, developed by Harry Garland and Roger Melen, which used surface electromyogram (EMG) signals to control an audio tone.

Bobo Doll (Observational Learning)

1961

Albert Bandura (b. 1925)

In the new American suburbs built after World War II, many Americans found themselves anxious despite their prosperity and the presence of numerous household appliances, including the TV. The 1950s was the decade when middle-class fears about juvenile delinquency first peaked as many parents worried that their children would become social deviants because of what they viewed on television.

In this atmosphere, the young psychologist Albert Bandura began to study the roots of adolescent aggression. In 1961 he published the first of his famous studies using the Bobo doll, an inflatable plastic toy that rebounds to a standing position when punched or hit. In the study, children between the ages of three and six were divided into three groups. Some of the children observed an adult model acting aggressively toward a Bobo doll. Others observed an adult model playing with toys but not acting aggressively, while a third of the children served as a control group and did not observe an adult model. Bandura found that both boys and girls who observed aggression toward the doll were much more likely to display aggressive behavior themselves when given a chance; the rates of aggression were higher when boys observed an aggressive adult male and girls observed an aggressive adult female.

Over the next several years, Bandura refined these studies and developed his theory of observational or social learning; that is, we learn by observing others. Bandura's research showed that critical components of social learning include the characteristics of the model (e.g., gender, age), the observer's characteristics (e.g., confidence, past experience), and the rewards available (e.g., praise, material goods).

Bandura's model of observational learning has been applied in many situations, and has been used to support the finding that watching violent TV shows or playing violent video games increases the likelihood of aggression.

SEE ALSO *Rattus norvegicus* var. *albinus* (1929)

The Bobo doll used in Bandura's original observational learning experiments.

Humanistic Psychology

1961

Carl R. Rogers (1902–1987), **Abraham Maslow** (1908–1970)

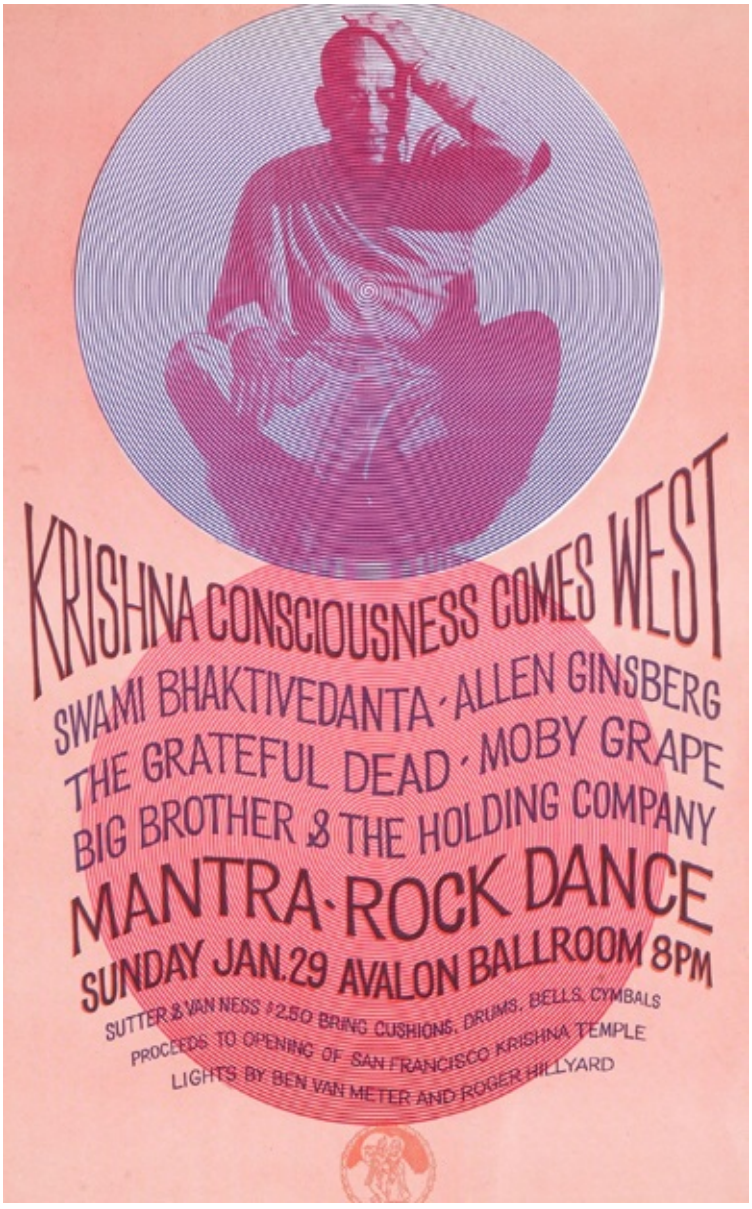
A “third force” emerged in American psychology in the 1950s and found its first institutional voice in 1961, when the *Journal of Humanistic Psychology* was founded. Humanistic psychology was meant to offer an alternative to **Psychoanalysis**, with its insistence on unconscious sexual and aggressive drives. Humanistic psychology also rejected **Behaviorism** and its depiction of humans as mechanical responders to reinforcement and punishment.

Humanistic psychology owed much of its inspiration to older phenomenological and existential philosophers whose work focused on the individual’s unique experience of the world and the struggle to make a meaningful life. But the new humanistic psychologists rejected the pessimism of European philosophies in favor of an optimistic view of human potential and an innate capacity for psychological growth. Carl Rogers was already well-known for his innovative **Client-Centered Therapy**, with its aims of helping people become fully functioning, authentic individuals. Abraham Maslow had inspired many psychologists with his **Hierarchy of Needs** and his call to study peak experiences, which were thought to express the highest point of the self-actualizing process. The psychologists who gathered to create the third force had just lived through an era of great conformity whose nadir was McCarthyism. At the same time, America had become an intensely consumerist culture whose highest apparent values were accumulation of goods and aspirations to great wealth. Humanistic psychologists argued that conformity and consumerism had obscured the human ability to know our true needs and hindered us from living authentic lives. Humanistic psychologists suggested turning our attention back to those qualities that make us most human: creativity, agency, free will, intentionality, self-determination, imagination, and values.

During the 1960s, humanistic psychology flourished, especially in the private sphere of the psychotherapist’s office, where people learned how to lead meaningful lives. In the public sphere, humanistic psychologists’ expressions of

human potential and the need for authentic lives resonated with the emerging counterculture.

SEE ALSO Hierarchy of Needs (1943), Client-Centered Therapy (1947), Transpersonal Psychology (1968), Flow (1990), Positive Psychology (2000)


KRISHNA CONSCIOUSNESS COMES WEST
SWAMI BHAKTIVEDANTA · ALLEN GINSBERG
THE GRATEFUL DEAD · MOBY GRAPE
BIG BROTHER & THE HOLDING COMPANY
MANTRA-ROCK DANCE
SUNDAY JAN.29 AVALON BALLROOM 8PM
SUTTER & VAN NESS $2.50 BRING CUSHIONS, DRUMS, BELLS, CYMBALS
PROCEEDS TO OPENING OF SAN FRANCISCO KRISHNA TEMPLE
LIGHTS BY BEN VAN METER AND ROGER HILLYARD

Promotional poster for Mantra-Rock Dance music countercultural event, 1967. Humanistic psychology flourished during this time.

Split-Brain Studies

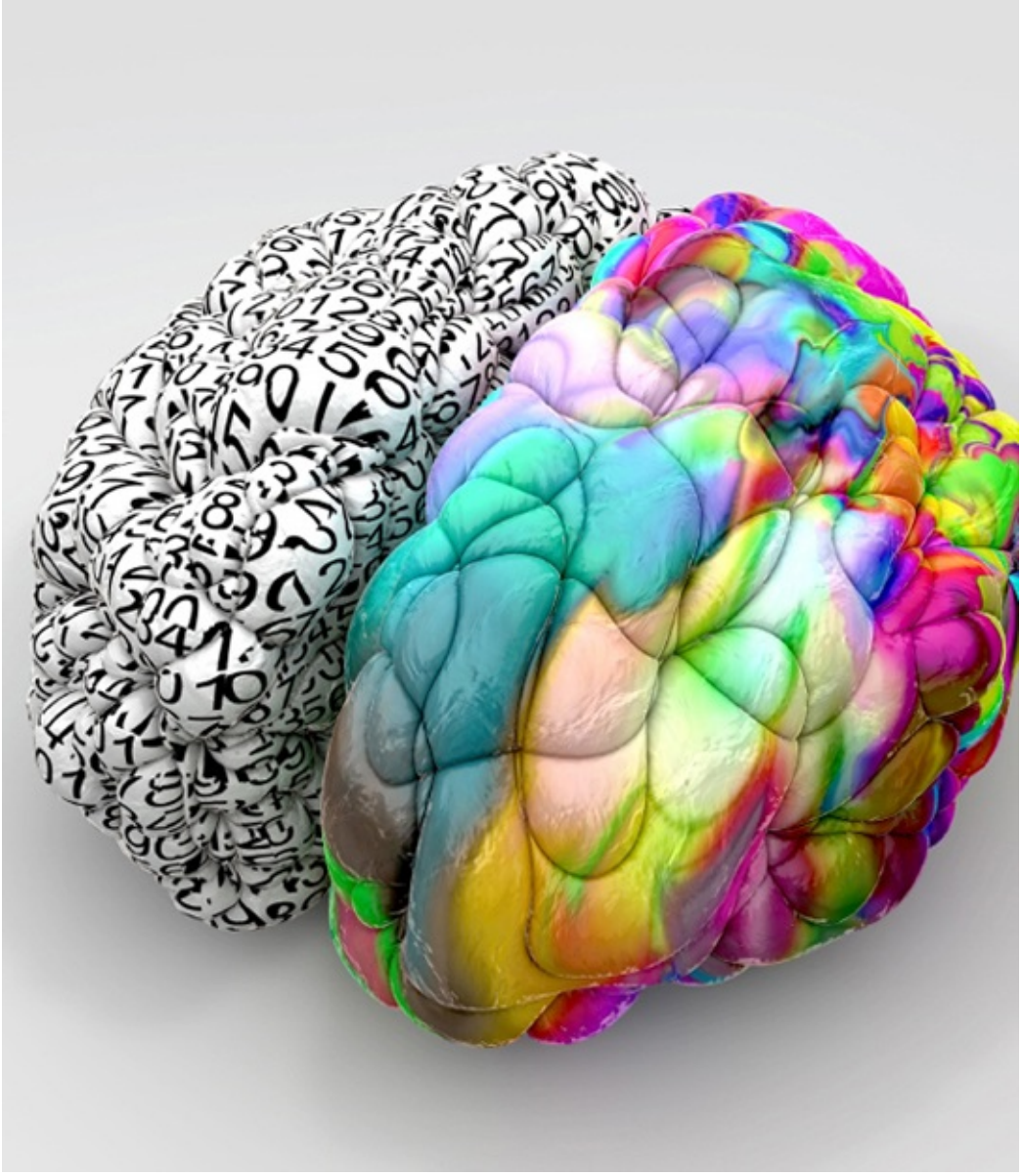
1962

Roger W. Sperry (1913–1994)

In the early 1960s, brain scientist Roger Sperry began a research program with patients who had severe epilepsy. Some years earlier, neurosurgeons had begun performing operations with such patients in which they severed the corpus callosum, or bridge of nerve fibers that connects the two hemispheres of the brain, in the hope of reducing the severity of seizures. But no one had done research with these patients to determine the full effects of the operation. Most of the patients, in fact, seemed pretty normal in their behavior and personality after the operation and typically experienced relief from the most severe seizures. Sperry, however, thought that these "split-brain" patients might be able to help us understand our conscious minds. Were the two hemispheres dissimilar in their abilities and functions? If so, what were those distinctions, and what difference might they make? He published his definitive study of the results of severing the corpus callosum, "Cerebral Organization and Behavior," in *Science* in 1962.

Sperry had already conducted similar research with split-brain monkeys and found that the two sides of the brain can function independently. With his human patients, Sperry devised clever ways to deliver a stimulus to one side of the brain, thus eliciting one set of behaviors; the same stimulus delivered to the other side would elicit different results. For example, when shown a dollar sign on the left side and a question mark on the right side, a patient would make a question mark when prompted to draw with his left hand; but when asked what he had just drawn, almost invariably the answer was "a dollar sign." Thus Sperry's research showed the world that we have two minds, each with its own consciousness and with some unique abilities and disabilities. In most people, the left hemisphere is verbal and analytic, while the right hemisphere is nonverbal, or more visual and holistic, and definitely thinks for itself.

SEE ALSO Localization of Brain Function (1861), Brain Imaging (1924)



The left side of this illustration of the brain depicts an analytical, structured, and logical mind, while the right side depicts a scattered, creative mind.

The Feminine Mystique

1963

Betty Friedan (1921–2006)

In 1963, a college-educated journalist and mother of three published a book that ignited the United States women's movement. In *The Feminine Mystique*, Betty Friedan presented the results of a survey of her undergraduate classmates at Smith College, concluding that most of them had suffered the same fate as she: they had become mired in a postwar snare of expectations around domestic duties and motherhood that left them isolated, unfulfilled, and in despair. She called this the "problem that has no name."

Resonating with thousands of American women, Friedan's arguments drew heavily on psychological themes and theories, including **Psychoanalysis**, which she and many other feminists criticized for its pathologization of women, and **Humanistic Psychology**, which she drew upon to justify the need for women's self-actualization and liberation. Friedan had been a psychology major as an undergraduate at Smith and had considered pursuing graduate studies in the field. Although she did not become a psychologist, her thinking and her writing were heavily influenced by the psychological theories she had learned about and that infused popular culture in this period.

Friedan's critique of postwar America's construction of gender roles was not without its own critics. Some charged that Friedan's concerns were primarily the concerns of middle-and upper-middle-class white women and did not reflect the reality that more and more women were entering the workforce during the time she was writing about. Regardless, many women who read the book cited it as the catalyst that mobilized them into political action by the end of the 1960s. Friedan was one of the founders of the National Organization for Women, served as its first president, and in 1970 helped organize the nationwide Women's Strike for Equality, which drew tens of thousands of women to Fifth Avenue in New York City. It was a vivid demonstration of the broad base and sheer power of the women's movement.

SEE ALSO Sex Roles (1944), *Women and Madness* (1972), *In a Different Voice* (1982)

Defying cultural expectations of domesticity, a female turret lathe operator machines parts for transport planes at the Consolidated Aircraft Corporation plant in Fort Worth, Texas, 1942.

Gender Identity

1963

John Money (1921–2006), **Robert Stoller** (1924–1991), **Judith Butler** (b. 1956)

Gender identity refers to the subjective sense of one's own masculinity and femininity that is independent of one's biological sex. In 1963, psychoanalyst Robert Stoller presented the term in a talk before the International Psychoanalytic Congress, and published a seminal book in 1968 called *Sex and Gender: On the Development of Masculinity and Femininity.* Around the same time, psychologist John Money was involved in a dramatic case of gender and sex reassignment, which he used to buttress his claim that gender identity was completely learned rather than biologically determined. In the treatment of a male infant who had lost his penis as a result of a botched circumcision, Money recommended that the infant be renamed, raised as a girl, and given hormone therapy. Years later, critics claimed that Money's recommendations had been unsuccessful and that his patient, despite gender reassignment, still identified as a man.

The idea that gender identity must be congruent with biological sex is a cultural norm in most societies. This norm reinforces gender-conforming behavior and penalizes gender-nonconforming behavior and appearance in both sexes. In 1980, the controversial category of gender identity disorder (GID) appeared in the third revision of the *Diagnostic and Statistical Manual of Mental Disorders* (1987). In adults, GID manifests itself as clinically significant distress due to the feeling that one's biological sex and one's gender identity are not aligned. Sex-reassignment surgery is one treatment option. Critics argue that the categorization of GID as a mental illness leads to the pathologization and stigmatization of gender-nonconforming individuals.

In 1990, feminist philosopher Judith Butler published her famous book *Gender Trouble,* in which she introduced the notion of gender performativity. The appearance of gender as a coherent category, Butler argues, comes about

through the repetition of certain ritualized acts that are culturally constructed and normatively regulated. Thus gender—and sex and sexuality—attains its apparent naturalness only through the repeated performance of certain stylized behaviors.

SEE ALSO Sex Roles (1944)

Sheet music cover for the song "The Latest Chap on Earth," as sung by Vesta Tilley (1864–1952), an English drag king.

Soldiers dressed as chorus gals in This is the Army, a Broadway hit musical by composer Irving Berlin.

Obedience

1963

Stanley Milgram (1933–1984)

The questions of conformity and obedience hung over American social sciences in the years after World War II. Why had so many Germans acquiesced in the Nazi scheme to exterminate the Jews? In this context, psychologist Stanley Milgram recruited ordinary members of the community for a study of "teaching and learning," which he published to great controversy in 1963. When the subjects, all of them men, arrived at Milgram's laboratory at Yale University, each one was greeted by a scientist and asked to wait a few minutes for another man to arrive; unknown to the subject, the second man was actually in league with Milgram. A rigged drawing always resulted in Milgram's helper taking on the role of learner. After observing the learner being strapped in a chair with electrodes attached to him, the teacher was instructed to administer shocks each time the learner made a mistake in answer to a question. The teacher then sat in front of shock generator with knobs indicating increasing shock levels between 15 and 450 volts.

Once the experiment began, each time the learner made an error, the teacher pressed the knob to shock him. The learner, who was not actually being shocked, responded with moans, cries, screams, and then complete silence as the voltage increased. If the teacher protested that he could not do it, the experimenter refused his attempts to stop, telling him, "You must go on" or "The experiment requires that you continue." Almost 63 percent of the teachers went all the way to the highest voltage, with 360 volts the average amount given.

Were these men (and, later, women) evil and heartless or secret psychopaths? The evidence indicates that these were ordinary men and women. The lesson we learn from this is that any of us might obey and conform just as much as these "teachers" did unless we understand the power of the situation and how we can resist it.

SEE ALSO Conformity and Independence (1951), Stanford Prison Experiment (1971)

Trial of Holocaust organizer Adolf Eichmann, Jerusalem, 1961. During the trial, Eichmann insisted that he had only been "following orders" when he facilitated the mass deportation of Jews to ghettos and extermination camps.

Bystander Effect

1964

Bibb Latané (b. 1937), **John Darley** (b. 1938)

Under what conditions are human beings, at least in Western societies, most likely to help another individual who is in distress, being harmed, or otherwise in need of assistance? One of the most well-known research findings in American social psychology suggests that people are more likely to help when they are alone rather than when they are in groups. This has come to be known as the bystander effect. The actual event from which the researchers drew their conclusions was the shocking murder in 1964 of a young woman, Kitty Genovese, on a New York City street in view of multiple witnesses. While at least one witness shouted at the attacker initially, once Genovese regained her footing and stumbled off, no one followed up. She was then attacked again, this time fatally.

Social psychologists Bibb Latané and John Darley were so disturbed by the lack of intervention that they attempted to replicate it in a series of laboratory studies (but they did not use murder or violent acts as part of the research). They argued that the presence of others—a group—may serve to inhibit action. In doing so, the researchers countered a long social-psychology tradition of viewing the group or the crowd as a likely source of inciting negative actions, such as group violence. For Latané and Darley, the effect of group pressure that resulted in inaction held potential to undermine social values and social order.

The take-home message for many readers was that crowded cities are dangerous, and no one will help you if you are threatened. More recent research has questioned many of the key aspects of the Genovese story, including the number and actions of witnesses. Perhaps even more important, some social psychologists have begun to show the positive power of people in groups and how they can be energized to act on behalf of others.

SEE ALSO Conformity and Independence (1951), Obedience (1963)

New York City subway riders lost in their own thoughts, reading the newspaper, in this 1974 photograph by Jim Pickerell. Social psychology studies suggest that people are more likely to help when they are alone rather than when they surrounded by other people.

Head Start

1965

Martin Deutsch (1926–2002), **Cynthia Deutsch** (b. 1928)

In 1958, two psychologists in New York City, Martin and Cynthia Deutsch, opened a new experimental program for preschool-age children in three Harlem school districts. Their aim was to see if children who lived in impoverished conditions would benefit from an **Enriched Environment**. The children—black, white, Hispanic—attended a special class meant to stimulate them socially and cognitively. When the children began school the following year, they did better on many school tasks than similar children who had not had this enriched experience.

The Deutsches' program was one of several in this era that attempted to provide social, emotional, and intellectual enrichment programs to poor children. These programs represented a change in thinking from a belief that intellectual ability is fixed at birth to one that emphasized the importance of the environment and stimulation. Some of the psychological research that gave impetus to this change came from laboratory work on rats. For example, in the 1950s a group of psychologists at the University of California, Berkeley, devised enriched environments for some of their rats. Upon autopsy, brain sections indicated a much richer network of neural connections than in control rats that had only experienced standard laboratory environments.

Psychologist J. McVicker Hunt's research in the late 1950s led him to conclude that experience and the immediate environment are vitally important for intellectual development in children, and other psychologists agreed. In the 1960s, President Lyndon Johnson's War on Poverty brought many psychologists and educators together to create a plan for improving educational opportunities for preschool children. This led to the creation of Head Start, now a national program to help young children from low-income families. Its first program lasted only eight weeks in the summer of 1965. By 1966, it was made part of the regular school year and soon was in place in schools around the country. Since its inception, more than twenty million children have benefited from its

programs.

SEE ALSO Enriched Environments (1961)

Students in a free art class at the Harlem Art Center in New York City, 1938.

Language Acquisition Device

1965

Noam Chomsky (b. 1928)

Why does it seem so relatively easy for very young children to learn language? Is it, in fact, just a matter of learning by experience what words mean and how to structure them so that meaning is communicated? Some psychologists have thought so: B. F. Skinner, for example, proposed that verbal behavior is primarily a matter of reinforcement.

Linguist Noam Chomsky believed that it wasn't just, or only, a matter of learning from experience and being rewarded for correct performance. In work that began during the 1950s but reached its clearest expression in the 1960s, he proposed a different theory, one that suggests that humans are born with an innate endowment to learn language; that is, humans universally have the capacity, barring gross pathology, to acquire language.

Chomsky proposed an innate blueprint for language development—the language acquisition device, or LAD—in his 1965 book, *Aspects of the Theory of Syntax.* The LAD is a result of the evolutionary adaptation that has given humans the native ability to grasp and apply the underlying rules of language, or grammar. The grammar of language is similar across all languages, even sign language, and this is why children learn language of any kind in approximately the same developmental period.

The theory proved immensely useful in helping linguists understand how children rapidly develop the ability to transform language; in other words, they quickly learn how to use grammar to generate "surface" structures from the "deep" structures. For example, I may write, *The young man dropped the ball* or *The ball was dropped by the young man.* The deep structure is the same, but the surface structure—the specific expression—is different. Language and its acquisition is complex, and while Chomsky's theory generated rich research results, it has not been the only model that has proven useful.

SEE ALSO Apes and Language (1909), Genetic Epistemology (1926)

Tower of Babel *by Pieter Brueghel the Elder, 1563, depicting a tower built, according to the Book of Genesis, by a monolingual humanity in an effort to prevent the human race from scattering.*

Human Sexual Response

1966

William H. Masters (1915–2001), **Virginia E. Johnson** (1925–2013)

The laboratory study of human sexuality was the landmark contribution of gynecologist William Masters and psychologist Virginia Johnson. Others had studied sex before them, but their pioneering efforts greatly expanded what was known about sexuality and, perhaps more important, helped create a dynamic field of the scientific study of sexuality. Their first major report of their work was *Human Sexual Response*, published in 1966.

Beginning in the nineteenth century, several scientists and physicians had written about sexual behavior. There were psychiatrist Richard von Krafft-Ebing's studies of sexual pathology, ***Psychopathia Sexualis*** (1886), and physician Havelock Ellis filled six volumes with detailed accounts of sexuality. In America, pioneering research was conducted by social reformer and criminologist Katherine Bement Davis on college women's sexual behavior; psychiatrist Gilbert Hamilton conducted case studies of married couples' sex lives in New York City during the late 1920s; and, of course, Alfred Kinsey had written two volumes on sexual behavior that were based on extensive interviews during the 1930s and 1940s.

The laboratory setting made Masters and Johnson's research possible. By adapting extant measurement devices, such as the penile plethysmograph, and by careful observation of sexual activity in the laboratory, they were able to document and describe human sexual response. It was through their work that we first knew what happens in female sexual arousal, and they proved that stimulation leading to orgasm could result from both clitoral and vaginal sources. Their study proved women could be multiorgasmic within one sexual activity cycle. Masters and Johnson also did extensive studies on sexuality and the aging process, on homosexual interaction, and sexual dysfunction.

Based on their research, the team described the four stages of the human

sexual-response cycle: excitement, plateau, orgasm, and resolution. Their articulation of the response has held up over the years, even though some of their specific findings have been shown to have a cultural bias.

SEE ALSO Sex Roles (1944), The Kinsey Reports (1948–1953)

The Kiss *by Austrian symbolist painter Gustav Klimt, 1907–1908.*

Psychology and Social Justice

1967

Martin Luther King Jr. (1929–1968)

In September of 1967, less than a year before he was assassinated, Martin Luther King Jr. gave an electrifying address to more than five thousand members of the **American Psychological Association** (APA) in Washington, D.C. The presence of King at APA was unprecedented; in fact, race and social problems were not issues that the leadership of APA had ever addressed effectively.

The organized discipline of psychology in the United States was largely conservative in its view of the need to make their science and practice relevant to social problems, despite the saliency of the long civil rights struggle in the United States. But a group affiliated with APA, the Society for the Psychological Study of Social Issues (SPSSI), invited King to give an address at the annual APA convention. King spoke on "The Role of the Behavioral Scientist in the Civil Rights Movement." The speech galvanized many psychologists and led them to become more involved in social issues. The very next year, APA approached Kenneth B. Clark, a prominent African American social psychologist and friend of King's, to run for the APA presidency. To date, he is the only African American to be president of APA.

Prior to this time, Clark had not been actively involved in APA. The research on racial identity conducted by Clark and his wife, Mamie Phipps Clark, known as **The Doll Studies**, was cited in the Supreme Court's 1954 decision in *Brown v. Board of Education of Topeka, Kansas.* This had made him a public figure, with influence far beyond the field of social psychology. Since then, Clark had grown pessimistic about the possibility of a just society that was free from racism. He wrote a friend, "How long can our nation continue the tremendous wastage of human intellectual resources demanded by racism?"

King's speech made a difference. By the 1970s, there were active efforts to create more opportunities for graduate training in psychology to students of color.

SEE ALSO Black Psychology (1970), The BITCH Test (1970), Liberation Psychology (1989)

Martin Luther King Jr. at the American Psychological Association Convention, 1967.

Transpersonal Psychology

1968

Abraham Maslow (1908–1970)

In order to understand what it means to be self-actualized—that is, to fully use one's talents and reach one's potential—psychologist Abraham Maslow studied historical figures, such as Abraham Lincoln, and contemporary giants, such as Albert Einstein. He hypothesized that we could learn more by examining whole, healthy personalities than we could by focusing on people's deficits. One of the things he discovered in the people he researched was that each one had known at least one "peak experience," by which Maslow meant moments of especially intense feelings or overwhelming beauty.

Among the peak experiences were some particularly rare moments, such as the mystical experiences of poets and saints. As Maslow continued his studies, he came to believe that there are some individuals who experience transcendence and feel connected with the mystery of all things. In doing so, they have a sense of the unity of all life.

By the late 1960s, Maslow was convinced that there was a psychology beyond **Humanistic Psychology** and a way to live that went beyond self-actualization. He began writing and talking about the farthest reaches of human nature, an area of study that he called transpersonal psychology. His 1968 book, *Toward a Psychology of Being*, laid the groundwork for further developments. With his colleagues, he defined the task of transpersonal psychology as the scientific study and description of the spiritual dimension of what it is to be human. Unfortunately, just two years after developing the concept, Maslow died of a heart attack while walking on a California beach.

After Maslow's death, the transpersonal movement was taken up by several psychologists who have written eloquently about its possibilities. As compared with **Humanistic Psychology**, transpersonal psychology embraces the spiritual traditions and practices of non-Western cultures. This has given the field a richness that appeals to people around the world. By the end of the twentieth century the following definition was given: "Transpersonal psychology is

concerned with the study of humanity's highest potential."

SEE ALSO Humanistic Psychology (1961), Flow (1990), Positive Psychology (2000)

The Wanderer above the Sea of Fog *by German painter Johann Caspar Friedrich, 1818.*

Attachment Theory

1969

John Bowlby (1907–1990)

By the end of World War II, thousands of infants and young children had been separated from their parents during the bombing of London and other English cities, with grave psychological consequences. In 1946, John Bowlby, a young psychiatrist who studied how children's experiences within their families influenced personality development, became the head of London's Tavistock Clinic Department for Children and Families. Bowlby became dissatisfied with psychoanalytic theories about children's anxieties related to separation. At this time, he became acquainted with the work of ethologists Niko Tinbergen and Konrad Lorenz, who studied parent-offspring behavior in a variety of species.

The comparative approach gave Bowlby a new framework with which to study a child's ties to its primary caregiver. By using an ethological framework, Bowlby theorized that infant attachment to its caregiver served the evolutionarily adaptive function of protection, thus enhancing the likelihood of the child's survival. The early formulations of the theory were tested in research by Bowlby and his colleagues. The research conducted by developmental psychologist Mary Ainsworth proved most important, as she developed an extensive body of findings that established our current typology of secure, avoidant, ambivalent, and disorganized attachment. Bowlby and others extended the theory to encompass adolescents and adults. While numerous articles were published by Bowlby and others in the 1950s and 1960s, Bowlby published a fully developed theory of attachment in his 1969 book, *Attachment and Loss.*

The work now rests on an impressive research foundation that has done much to elaborate our understanding of human development and the clinical implications when it goes awry. Briefly, the theory holds that safety and protection are the core of attachment. Once a child knows it is secure, then it is possible to explore the immediate environment. Once interiorized, such security creates optimal conditions for cognitive, social, emotional, and personality development over the life course. While Bowlby suggested that this model of

attachment is universal to the human experience, recent research suggests that there are important cultural variations.

SEE ALSO Failure to Thrive (1945), *King Solomon's Ring* (1952), The Strange Situation (1969)

A mother and daughter walking along Roppongi Dori Ave in Tokyo, Japan, 2012.

The Strange Situation

1969

Mary Dinsmore Salter Ainsworth (1913–1999)

When developmental psychologist Mary Ainsworth traveled with her husband to Uganda in 1954, she already had extensive experience working with John Bowlby as he developed his theories about the importance of attachment for normal development. Her observations of mother-infant interactions in Uganda persuaded her that attachment between mother and child was an important evolutionary adaptation for human survival, as the attachment bond seemed to provide the security that children need to explore the world around them. Ainsworth observed that separation from the caregiver would naturally produce anxiety, which would be reduced upon being reunited.

Could attachment be studied in the laboratory? In 1969, Ainsworth devised a twenty-minute laboratory test called the Strange Situation to do just that. In the Strange Situation, the mother and infant are placed in a room new to them both. A variety of toys are placed around the room. Once the infant settles down, a stranger comes into the room, and the mother then leaves. The stranger gently approaches the infant, then leaves the room, whereupon the mother returns. The behaviors of interest are the infant's exploration of the room—both when the mother is present and when she is absent—and, most important, the infant's response to the mother when she returns.

Based on these behaviors, Ainsworth posited that there are three types of attachment. *Secure attachment* is characterized by infant exploration of the environment, minimal separation anxiety, and being easily comforted upon mother's return. *Insecure-avoidant attachment* is indicated by a small amount of distress over the mother leaving the room and avoidance of her when she returns. In *insecure-ambivalent attachment*, the infant is visibly upset by the mother's departure but shows a variety of responses to her return, sometimes avoiding and other times clinging to her.

The Strange Situation paradigm became one of the most widely used research tools in the history of developmental psychology. The results have been used to

shape public policy and to predict the nature of adult close relationships.

SEE ALSO Attachment Theory (1969), Ecological Systems Theory (1979)

This loving interaction illustrates a secure attachment style between mother and child.

Five Stages of Grief

1969

Elisabeth Kübler-Ross (1926–2004)

When we face impending death or experience the death of someone close to us, we must find a way to deal with our experience. It was the genius of psychiatrist Elisabeth Kübler-Ross to articulate an easily understandable model of five stages of grief—denial, anger, bargaining, depression, and acceptance—in her book *On Death and Dying* (1969).

Denial, the first stage, may occur when we are first told of a life-threatening illness or hear of the death of someone we love. Such denial can be a useful coping mechanism that gives us time to adjust to the news. We soon realize that denial is not enough, and anger may become the dominant emotion. Why me? Why did my friend die? It, too, is a temporary coping mechanism.

The realization that denial and anger will not change reality may lead to bargaining. This may be concomitant with a renewed faith in a higher power, whom we now try to convince through prayer or pleading to allow our loved one to live a little longer or to give us a few more years of strength.

Once we accept the reality of death, then a great sadness may set in. And with it may come a period of depression and passivity, in which we refuse to engage the world in the usual way.

Finally, we come to acceptance. In this stage we accept the reality of our loss or impending loss. With this acceptance may come peace and a new engagement with the world.

Kübler-Ross initially proposed the model in relation to death. But over time it has proven useful as a way to understand any major loss, such as divorce or loss of a job. Although the general public has found the model of great utility, the scientific community finds it lacking in scientific rigor.

SEE ALSO Stages of Adult Cognition (1977), Seasons of Life (1978), Ecological Systems Theory (1979)

Pain *by French sculptor Ernest Hulin, 1908.*

Fear of Success

1969

Matina Horner (b. 1939)

The construct of “fear of success” in women was formulated by psychologist Matina Horner in her doctoral dissertation at the University of Michigan in 1969. Noting that society was increasingly achieving equity in preparing men and women for careers, Horner became interested in the conflict between traditional beliefs about femininity and the competitiveness, independence, leadership, and intellectual achievement that women were called upon to demonstrate as they made their way in the paid workforce. In her original study, she presented a verbal lead to a group of undergraduate men and women. To the men, she presented: “After first term finals, John finds himself at the top of his medical school class.” The women received the same lead with the name Ann substituted for John. The respondents were then asked to write a story about Ann or John, and the stories were coded for the presence or absence of the motive to avoid success. Horner reported that 90 percent of the men responded positively to the male success cue, while 65 percent of the women responded with stories that anticipated social rejection, loss of femininity, or personal distress. In further studies she examined the behavioral consequences of the fear of success and concluded that when faced with a conflict between their feminine image and expressing their competencies, many women changed their behavior to bring it in line with internalized sex-role stereotypes.

“Fear of success” was controversial among feminists because it appeared to individualize the problem of sex-role conflicts. It was also controversial among researchers because Horner’s findings were difficult to replicate and were never published in a peer-reviewed journal. The popular press took up the idea of fear of success enthusiastically, however, especially when Horner became the sixth president of Radcliffe College at Harvard University and the youngest woman ever to achieve that post—at the age of thirty-two.

SEE ALSO Sex Roles (1944), *The Feminine Mystique* (1963)

A shopping window in St. Gallen, Switzerland, displays a photograph of a mid-twentieth-century housewife in complete awe of the store's wide collection of vacuum cleaners and other domestic appliances.

Black Psychology

1970

Joseph L. White (b. 1928), **Robert V. Guthrie** (1930–2005)

In a 1970 article for *Ebony* magazine, African American psychologist Dr. Joseph L. White coined the term *black psychology* to describe a new direction in American psychology led by African American psychologists, who had only recently formed the Association of Black Psychologists (ABPsi). American psychology at this time had a long history of discriminatory theories and practices, typically emphasizing perceived deficits of black families, black children, and black individuals while ignoring the social and class structures that provided whites with more supportive, intellectually rich environments and educational opportunities. Intelligence tests were used to maintain the supposed superior intelligence of whites.

In his seminal book *Even the Rat Was White* (1976), African American psychologist Robert Guthrie documented the underrepresentation of blacks, Latinos, Asians, and American Indians in the field of psychology. In the 1960s, the emergent black nationalist movement and the work of such figures as Malcolm X, Stokely Carmichael, H. Rap Brown, and others made terms and phrases such as *Black Power*, *Black Pride,* and *Black Is Beautiful* commonplace in African American communities, indicating a new consciousness of pride and achievement. Influenced by this movement, a handful of young African American psychologists created black psychology, grounded in the positive values of the African American community, such as resilience and social support. Black psychology was more than a reaction to oppression; its focus was on the strengths and spirit of African Americans.

The impact of black psychology on theory, research, and practice in American psychology has been profound, and it continues to the present. For example, theories of black identity have enriched the psychological study of identity formation, and African American psychologists have articulated effective approaches to psychotherapy that draw on the black experience in America.

SEE ALSO Stress (1950), The BITCH Test (1970), Resilience (1973), Hardiness (1979)

Martin Luther King Jr. and Malcolm X meet before a press conference on March 26, 1964. Both men had come to hear the Senate debate on the Civil Rights Act of 1964. This was the only time the two men ever met, and their meeting lasted only one minute.

The BITCH Test

1970

Robert L. Williams (b. 1930)

By the 1960s, the number of psychologists of color in the United States was finally on the increase after decades of resistance by the psychological establishment. Once in, they encountered a particularly hostile discipline. In particular there was a tradition of using psychological tests, especially intelligence tests, to maintain racial oppression and inequality.

The formation of the Association of Black Psychologists (ABPsi) in 1968 had given voice to the concerns of African American psychologists about the use of tests in support of discriminatory policies. The work of ABPsi drew upon their contemporary experience as well as on the work of African American and Chicano psychologists of the 1920s and 1930s, such as Herman Canady, Albert Beckham, and George Sanchez. These psychologists and their colleagues had skillfully debunked the claims of racial superiority based on intelligence test results.

The attitude in the late 1960s was more militant. Robert Williams, cofounder and second president of ABPsi, had experienced the negative consequences of biased psychological testing. He began a project to construct a culturally specific test, the Black Intelligence Test of Cultural Homogeneity (BITCH), published in 1970. As Williams wrote at the time, “A ‘culture specific’ test is used to determine the taker’s ability to function symbolically or to think in terms of his own culture and environment.” The test was intended to determine the impact of cultural influence on test taking. The BITCH results captured a greater range of intellectual ability in black children than the standard intelligence tests then in use. Williams and his colleagues, especially African American psychologist Harold Dent, further pursued the question of biased testing. By the late 1970s, the court of appeals ruled in the case of *Larry P. v. Riles* that intelligence tests could not be used to track racial or ethnic minority children into classes for the mentally retarded.

SEE ALSO Army Intelligence Tests and Racism (1921), Black Psychology (1970)

Dr. Robert L. Williams and Dr. Michael Connor. Dr. Williams was one of the founders of the Association of Black Psychology, the developer of the BITCH test, and the creator of Ebonics.

Discovery of the Unconscious

1970

Henri F. Ellenberger (1905–1993)

A landmark book when it was published in 1970, psychiatrist Henri Ellenberger's *Discovery of the Unconscious* remains the best introduction to psychodynamic psychology—a term that refers to a range of psychological theories about the unconscious determinants of human behavior. In no other book do we find such a careful and clear exposition of how psychotherapeutic treatments evolved over the course of human history.

Ellenberger was of French Swiss descent and was educated in France. He specialized in psychiatry when he entered medical school. Thus he was trained in psychiatry at just the time that psychodynamic training and practice were becoming commonly available. (The word *psychodynamic* is used here to mean both the psychoanalytic approach of Freud and the depth psychology of Carl Jung.) During the 1950s, Ellenberger spent six years at the Menninger Clinic in the United States, where he first began writing histories of psychodynamic psychology.

Discovery of the Unconscious is astonishing in its range. Ellenberger convincingly demonstrates the multiple interconnections across time and place of insights and practices that eventually formed modern psychological approaches to treating mental disorders. Rather than divide history into prescientific and scientific eras, Ellenberger documents the creation of our understanding of the unconscious as a product of the therapeutic and religious work of many people over several millennia. Thus shamans, *curanderos*, mystics, mesmerists, spiritualists, priests, and poets all contributed throughout human history, along with those one would normally expect: physicians, psychiatrists, pastoral counselors, and psychologists.

Ellenberger provides the most comprehensive account of the context of Sigmund Freud's life and work. He situates Freud within nineteenth-century Jewish history and traces the many and varied influences—intellectual, political, social, economic—on Freud's intellectual and clinical development. In addition,

he highlights the work of many other key contributors in the modern era, such as Pierre Janet.

This is *the* book to read to understand how modern mental-health treatment evolved.

SEE ALSO Shamanism (c. 10,000 BCE), Psychoanalysis (1899), Emmanuel Movement (1906), Jungian Psychology (1913)

Surface and Depth. *This photograph of leaves reflected in water conveys the layers of consciousness and the idea that not all meaning can be found on the surface.*

Stanford Prison Experiment

1971

Philip G. Zimbardo (b. 1933)

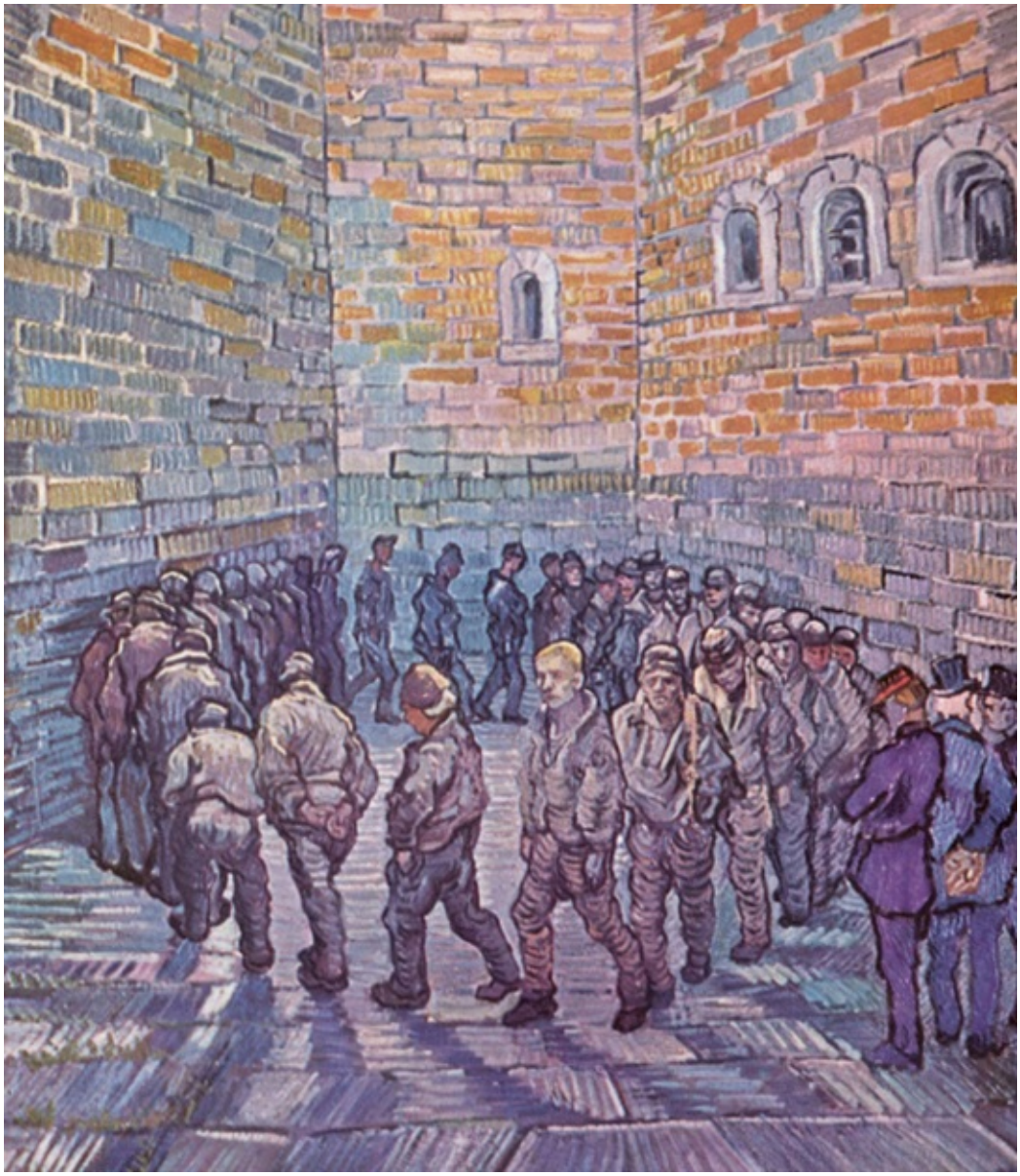
A long-running debate in American social psychology has been whether we should attribute more importance to the person or the situation in regard to behavior. An experiment conducted by Stanford University psychologist Phil Zimbardo came down decidedly on the power of the situation.

In the summer of 1971, police picked up ten Stanford University students in a surprise arrest. They were handcuffed, fingerprinted, and left in solitary cells. The warden announced the rules of the prison, including the threat of further punishment if they broke the rules. The warden then turned the prisoners over to the guards. The "prisoners" and the "guards" were all part of an experiment to investigate the power of the situation in shaping our behavior.

The "prison" was in the basement of Stanford's Psychology Department, thus there were no windows, and no way to tell whether it was day or night. It quickly became a very stressful experience for the prisoners; the guards denied them bathroom visits, woke them after only a brief period of sleep, yelled at them, and generally sought to dehumanize them. Five of the prisoners broke down and had to be released; others became blindly obedient to the authority of the guards and turned on their fellow prisoners in order to obtain favors from the guards. The guards took on their roles with a vengeance and became abusive. Zimbardo also identified with his role as superintendent and, as he later acknowledged, lost sight of the event as an experiment, overlooking the suffering he was causing the student-prisoners. After five days, Zimbardo stopped the project and apologized for allowing the situation to get out of hand.

Zimbardo revisited the implications of the prison experiment when the abuses at Iraq's Abu Ghraib prison came to light in 2004. His book *The Lucifer Effect* (2007) reexamined the person-situation debate and concluded that both the Stanford prison experiment and Abu Ghraib are chilling reminders of what everyday people are capable of doing in response to stressful situations.

SEE ALSO Conformity and Independence (1951), Obedience (1963), Social Identity Theory (1979)



Prisoners Exercising, *also known as* Prisoners' Round, *by Vincent van Gogh, 1890.*

Universal Expression of Emotions

1971

Paul Ekman (b. 1934)

Charles Darwin argued for the universality of the visual appearance of human feelings in *The Expression of Emotions in Man and Animals* (1872). In the book, he explored how the varieties of human emotional expression had their origins in nonhuman animal behaviors. This work was picked up in the 1960s by psychologist Paul Ekman, who explicitly acknowledges his debt to Darwin. He and his longtime collaborator, Wallace Friesen, published their famous study, "Constants across Cultures in the Face and Emotion," in 1971. Since that time, Ekman has become the world's foremost authority on the facial expression of emotions.

A student of the emotions and personality researcher Silvan Tomkins, Ekman was doing research on the universality of emotional expression in his California laboratory when a federal funding agency asked him if a grant of several hundred thousand dollars might help him do the kind of field studies he needed to do but could not afford. Ekman used the funds to travel to New Guinea to work among the Fore, a tribal group with little exposure to the outside world. Ekman wanted to know if they would recognize various emotional expressions in a standard set of photographs he had developed. He had already shown the photographs to several hundred people living in a variety of cultures and found some support for the universality of several emotional expressions. But his critics pointed out that all his participants had already been exposed to many of the same stimuli through mass media, thus their identification of the emotions might be an artifact of shared cultural experiences. The tribe in New Guinea provided the best test of his theory.

Ekman found that the Fore people identified most of the expressions. Further research has provided general support for the universality of seven primary emotions: sadness, happiness, disgust, fear, anger, surprise, and contempt. Of these seven, the expression of happiness is the most common.

SEE ALSO Triangular Theory of Love (1986)

These Venetian carnival masks display a variety of basic human expressions.

Beyond Freedom and Dignity

1971

B. F. Skinner (1904–1990)

B. F. Skinner was one of the twentieth century's best-known psychologists. He was awarded the National Medal of Science in 1968, only the second psychologist to receive this distinction (Neal Miller received it in 1964). In the April 1970 issue of *Esquire* magazine, Skinner was named one of the "one hundred most important people in the world today," along with such diverse luminaries as Fidel Castro, Pablo Picasso, and Richard Nixon. In 1971, he received a Kennedy International Award for his role in founding the field of behavior modification, which has been used to improve the lives of people with developmental disabilities and many others.

That same year Skinner published his controversial book *Beyond Freedom and Dignity*, which appeared on the *New York Times* best-seller list for a total of twenty-six weeks. In it he urged readers to embrace the position that all our actions are determined by the environment. He argued that to ignore this fact and to continue to believe in free will and the irreproachable dignity of autonomous man would only impede our ability to solve major social problems, such as overpopulation, environmental degradation, and the threat of nuclear annihilation. His call for the repudiation of free will in favor of extreme environmentalism pitted him against some of the major values of American capitalism and democracy, such as the belief in the "self-made man," while paradoxically aligning him with others, such as the belief in the malleability of the human condition.

Skinner's arguments in the book generated intense controversy and vehement ad hominen attacks. Some questioned his sanity while others compared him to Adolf Hitler and Joseph Stalin. The controversy spread to popular media and helped make Skinner a household name. His image was on the cover of *Time* magazine, and he appeared regularly on TV talk shows. Despite the controversy and attention, Skinner worried that his arguments were not well understood. After all, his opinions struck at the very heart of what it meant to be not only an

American but also a human being.

SEE ALSO *Rattus norvegicus* var. *albinus* (1929), Teaching Machine (1954), Token Economy (1961)

Walden Pond in Concord, Massachusetts, 2010. Skinner's 1948 utopian novel Walden Two, *upon which many of the ideas in* Beyond Freedom and Dignity *are based, describes a community that emulates the simple living and self-sufficiency of transcendentalist Henry David Thoreau (1817–1862).*

Levels-of-Processing Model of Memory

1972

Fergus I. M. Craik (b. 1935), **Robert S. Lockhart** (b. 1939)

As the field of North American psychology turned toward an emphasis on cognition rather than behavior, cognitive scientists debated the question of how information is stored and processed in the brain. This led to various models of retention, storage, and retrieval. One of the most enduring models of long-term memory (LTM) became known as the levels-of-processing model, proposed in 1972 by Toronto psychologists Fergus Craik and Robert Lockhart. Starting with the assumption that memory is part of normal cognitive processes, including perception, comprehension, and categorization, Craik and Lockhart used the metaphor of depth to try to explain why durability of memory for specific stimuli varies so greatly.

In brief, they proposed that LTM is a function of how deeply an item or event is processed, which occurs on a continuum from shallow to deep. If we take perception of language as an example, then shallow processing occurs when superficial details—the *shape* of a letter—are the basis for the memory. Items processed at this level tend to be easily forgotten. But if we move to a somewhat deeper level, such as the *sound* of a word, then a slightly better memory results. Using this example, an analysis of the *meaning* of the word would represent the deepest level of processing and produces a better memory, with the person being able to easily recall the item. Craik and Lockhart proposed that the deeper the initial level of processing, the better LTM would be, and this was supported in a series of experimental studies.

The levels-of-processing model has been found to have implications in many psychological domains. For example, information about ourselves has been found to be processed at the deepest level and thus is easily recalled: we remember more things about our own lives than we do about the lives of others.

SEE ALSO Cocktail Party Effect (1953), Short-Term Memory (1956), Center for Cognitive Studies (1960)

Woman, Fiji. *Sepia-toned images like this one effectively convey memories by reminding us of the past and earlier modes of photography.*

Women and Madness

1972

Phyllis Chesler (b. 1940)

In what ways does madness, including the question of who is labeled as mad and why, carry gendered meanings? In the mid-to late nineteenth century, for example, women's prescribed social roles in middle-to upper-class affluent societies were so restrictive that they often developed psychological and physical symptoms as the only available form of protest against these restrictions. By the late twentieth century, it was a well-publicized fact that depression affects women at twice the rate of men.

In 1972, psychologist and feminist activist Phyllis Chesler published an important feminist critique of how women were treated by the psychiatric establishment. In *Women and Madness*, she argued that women in Western society at the time faced a double bind. Traditional gender stereotypes were frequently used as the basis for diagnostic categories, such as histrionic personality disorder, that pathologized women who conformed to them. At the same time, women who did not conform to these gender stereotypes were often condemned as deviant and disorderly. In short, being too feminine and not being feminine enough were both grounds for a diagnosis of psychopathology.

In this work, Chesler also characterized women's experiences in the predominantly male psychiatric establishment as a reiteration of the unequal relationships between women and men in society at large, and as yet another opportunity for women to be "helped" by being "expertly dominated" by men. Her classic work was one part of a powerful feminist critique of psychiatry and psychology that continues to this day.

SEE ALSO Hysteria (1886), American Classification of Mental Disorders (1918), Sex Roles (1944), Gender Identity (1963), "On Being Sane in Insane Places" (1972)

Sylvia Plath's gravestone at Heptonstall church in West Yorkshire, England, reads, "Even amidst fierce flames, the golden lotus can be planted." The famous poet struggled with depression throughout her life before committing suicide in 1963, at the age of thirty.

“On Being Sane in Insane Places”

1972

David L. Rosenhan (1929–2012)

> I have never received a psychiatric diagnosis or had a history of mental illness. Yet when I show up at the psychiatric hospital admissions office, reporting that I am hearing voices saying words like “empty,” “hollow,” and “thud,” I am admitted with a diagnosis of schizophrenia, a serious mental illness marked by a break with reality.

This was the ruse used by psychologist David Rosenhan and seven colleagues to gain admission to psychiatric hospitals. His aim was to study what happens when sane people are placed in places reserved for the insane: can the sane be distinguished from those who have been diagnosed as mentally ill?

Rosenhan’s group consisted of three psychologists, a painter, a housewife, a pediatrician, a psychiatrist, and a graduate student. They were admitted to twelve different mental hospitals without questioning, and they were prescribed medications, which they did not take. When their case histories were taken, they told the truth. Once admitted, they acted completely normal, just as they did in everyday life outside the institution. They were never detected as frauds by the psychiatrists or nurses, though many of their fellow patients did suspect them. All the pseudopatients were eventually discharged, but only after they “accepted” their diagnosis.

After this study was published, in 1972, Rosenhan did a comparative study in which a hospital was told that over the following three months, a pseudopatient would attempt to be admitted. Out of 193 admissions, eighty-five were suspected of being pseudopatients. None was.

The study aroused considerable controversy and incurred attempts to discredit it by the psychiatric profession. Rosenhan argued that the ambiguity and imprecision of psychiatric diagnoses held long-lasting and negative consequences for those diagnosed. It was especially harmful since it was clear that in many cases, mental health professionals could not distinguish the sane

from the insane.

SEE ALSO American Classification of Mental Disorders (1918), *The Presentation of Self in Everyday Life* (1959), *Women and Madness* (1972), DSM-III (1980)

Saint Elizabeth's psychiatric hospital in Washington, D.C., is one site where the Rosenhan experiment occurred.

Resilience

1973

Norman Garmezy (1918–2009)

The word *resilience* originated in engineering and materials science and referred to the ability of a material to return to its original shape or position after stress. *Resilience*, in its contemporary sense of the ability to successfully cope with difficulties, dates from the late 1960s.

In the 1960s, two apparently diverse streams in American life came together that led to a recognition of the importance of resilience. One stream was the new research that linked behavior and lifestyle factors to a variety of health outcomes, such as smoking and lung cancer. The other stream was the heightened awareness of social problems, especially racism, and their incredibly high cost in terms of public and personal health.

It was the work of Norman Garmezy in the late 1960s that brought these streams together. His study of children vulnerable to schizophrenia (for example, those who were poor or had a schizophrenic parent) revealed that many of these children never developed the disease. Garmezy was especially concerned about children who were otherwise disadvantaged in American society, such as African American children in large cities. He published his first studies of these children in 1973, and his work launched the contemporary examination of psychological resilience. At almost the same time, a new cohort of African American psychologists was writing about the strengths, including resilience, of black families and communities.

Since that time, research has uncovered many of the factors that characterize resilience. One researcher has called resilience “ordinary magic”—that is, the factors that lead to resilience are all facets of what human beings have evolved to do in order to adapt to a sometimes hostile and threatening environment. Good interpersonal skills, self-confidence, and positive caregiving are among these protective factors. More recently, cultural factors have also been shown to be important in the experience of resilience.

SEE ALSO Stress (1950), Black Psychology (1970), Biopsychosocial Model of Health (1977), Hardiness (1979)

Just as some plants and animals can thrive under difficult conditions, so can humans, as three generations of psychological research has now shown.

Judgment under Uncertainty

1974

Daniel Kahneman (b. 1934), **Amos Tversky** (1937–1996)

A friend suggests that you go on a blind date with a person whom he describes as very attractive, quiet, and thoughtful. How do you make the judgment whether you want to go out with this person? Cognitive psychologists suggest that you are likely to use one of several heuristics, or mental shortcuts, to help you decide.

In an article published in *Science* in 1974, psychologists Daniel Kahneman and Amos Tversky analyzed how we use heuristics to help us make decisions. As a result of their work, we now better understand the reasons we often make mistakes in our judgment. By extension, they have shown that humans are not necessarily the rational creatures that science supposes. In the article and in subsequent publications, Kahneman and Tversky showed how humans are very susceptible to erroneous intuitions, regardless of intelligence. Their article opened up a new domain of research in philosophy, psychology, and cognitive science. Kahneman and Tversky then turned to the study of decision making, which led to their development of prospect theory, which proposes that humans use heuristics to make decisions based on the possible value of losses and gains and not on the final outcome. The theory helped spawn the modern field of behavioral economics and led to Kahneman receiving the Nobel Prize in economics in 2002 (Tversky had died in 1996, and the Nobel is not awarded posthumously).

Here is an example of one such heuristic. We may wonder if taking the surface streets to work during rush hour is faster than taking the expressway. We recall our own experiences of driving to work to determine which strategy works best. If the thought of arriving sooner at work by taking surface streets comes to mind more easily, then our judgment may be that doing so is the best strategy. This is the availability heuristic. But judging by ease of recall may not be a consistently good strategy, as the expressway may frequently be faster in reality.

SEE ALSO Psychoanalysis (1899), Cognitive Dissonance (1957)

Eight hundred women strike for peace during the Cuban Missile Crisis on 47th Street near the United Nations headquarters in New York City, 1962.

President John F. Kennedy confers with Secretary of Defense, Robert S. McNamara, at the West Wing Collonade of the White House, October 29, 1962—the day after the Cuban missile crisis came to an end. The Kennedy administration's notoriously ill-conceived invasion of Cuba's Bay of Pigs in 1961 is often attributed to "groupthink," in which a group's desire for harmony leads it to make decisions without proper attention to critical evaluation or alternative viewpoints.

Measuring Androgyny

1974

Sandra Bem (b. 1944)

The term *androgynous* has been used since the early seventeenth century to refer to people who display the physical and behavioral characteristics ascribed to both males and females. In the context of psychological theory, the androgynous personality was defined and discussed by Sandra Bem in 1974. She proposed that whereas it had been customary for society to view masculinity and femininity as mutually exclusive sets of traits, it is actually possible for people to exhibit both masculine and feminine qualities. Further, she put forth the hypothesis that people with this personality configuration might have more behavioral flexibility than rigidly sex-typed individuals and thus experience better mental health.

She devised the Bem Sex Role Inventory (BSRI), published in 1974, as a measure of androgyny. On this instrument, respondents encounter a variety of words to describe traits considered socially desirable for men (e.g., ambitious, analytical, assertive), socially desirable for women (e.g., affectionate, soft-spoken, understanding), and neutral (e.g., conscientious, truthful, friendly). People who endorse an equally high number of both masculine and feminine traits on the BSRI are characterized as androgynous. Bem challenged the conventional wisdom that viewed masculinity and femininity as opposite ends of a continuum; however, her scale was criticized as reinforcing the very constructs of masculinity and femininity she sought to challenge, and researchers who used the scale sometimes had difficulty replicating their findings.

Nonetheless, the theory of psychological androgyny spawned an explosion of empirical studies and helped promote the idea that gender and biological sex are separate categories that need not be completely congruent in healthy individuals.

SEE ALSO Sex Roles (1944), Gender Identity (1963)

An illustration of Ardhanarishvara, an androygenous Hindu figure combining the male god Shiva and his consort, Parvati. The earliest Ardhanarishvara images date to the first century CE, *during the Kushan Empire.*

Psychoneuroimmunology

1975

Robert Ader (1932–2011), **Candace B. Pert** (b. 1946)

The immune system functions as a surveillance and defense network within the body. It protects against infections and other “foreign” invaders, but it has also been implicated in autoimmune disorders, such as arthritis. Psychoneuroimmunology (PNI) is an approach that studies the interactions of the immune system, neuroendocrine processes, and psychological factors in order to understand health and disease. The fact that psychological factors can affect the immune system is a relatively recent discovery, made by psychologist Robert Ader in 1975. It was first observed in rats that learned to avoid sweetened water when it was paired with a nausea-inducing drug that also suppressed the immune system. Ader’s team then found that the sweetened water alone would suppress immune function, indicating that psychological processes such as learning are linked to the immune system. About ten years later, neuroscientist and pharmacologist Candace Pert discovered that neurotransmitters have direct interactions with the immune system; further research indicated that there are intricate linkages between emotional states and immune function. This work suggests a potentially important connection between clinical anxiety, major depression, and physical health.

Broadly, research has shown that many stressors, from daily hassles like finding parking to major natural disasters, can have a negative effect on immunocompetence, or the capability for a normal immune response. The larger question is whether the psychological impact of stressors on the immune system can make a difference in terms of health. There is now a large body of research that shows that people under **Stress** are more vulnerable to infectious diseases, ranging from colds to flu to chicken pox. Chronic diseases, such as coronary heart disease, can be exacerbated by stress-related changes in immune system functions. Depression, in particular, appears to have the potential to significantly lower immunocompetence. PNI has emerged as one of the twenty-first century’s clearest examples of a true mind-body connection.

SEE ALSO Psychosomatic Medicine (1939), Stress (1950), Resilience (1973), Biopsychosocial Model of Health (1977), Hardiness (1979), Mind-Body Medicine (1993)

A surfer in the barrel of a wave. Since the 1970s, research has uncovered the close interworking of psychological and biological factors, including our immune system, in keeping us healthy.

Learned Helplessness

1975

Martin P. Seligman (b. 1942)

Melancholia, or depression, seemingly has been part of the human condition for at least as long as recorded history. Theories about its causes have changed from excess of one of the four humors to a psychoanalytic explanation that depression was aggression turned toward the self. In the late twentieth century, psychologist Martin Seligman proposed that depression occurs when people come to believe that they are helpless or unable to change salient aspects of their lives. As a result, depressed people develop a set of negative behaviors and beliefs, such as feeling hopeless and becoming passive in the face of challenge. This becomes a kind of **Self-Fulfilling Prophecy**, in that their negative expectations are often fulfilled, thus reinforcing their feeling of helplessness.

Seligman was trained as an experimental psychologist, and early in his career he worked with animal models to study the analogues of mental disorders in nonhumans. The studies that led to the formulation of learned helplessness theory were done with dogs. The animals were placed in specially designed cages with an electric grid in the floor. A barrier was raised in the middle of the cage when the grid was turned on in order to prevent the dog from moving to the safe side of the cage. After repeated shocks, the animals did not try to move to safety even when the barrier was not in place. Selgiman proposed that learned helplessness occurs when the failure to escape from painful situations generalizes to situations where escape would be possible.

The animal studies of learned helplessness were the analogues of clinical depression. Seligman developed a model that linked his animal studies with human depression in his 1975 book, *Helplessness.* Seligman and his colleagues later revised their theory to state that it wasn’t uncontrollable experiences per se but the way depressed people explained their experiences that was causal for depression. The model generated effective treatments based on helping depressed individuals modify their beliefs and expectations.

SEE ALSO *The Anatomy of Melancholy* (1621), Cognitive Therapy (1955), Positive Psychology (2000)

Melancholy *by French painter Constance Marie Charpentier, 1801.*

Sikolohiyang Pilipino

1975

Alfredo Lagmay (1919–2005), **Virgilio Enriquez** (1942–1994)

The Philippines was ruled by Spain for three centuries; then from 1898 until 1946, the country was governed by the United States. After the country's release from American sovereignty, many Filipinos sought to create institutions and approaches that reflected purely Filipino beliefs and values. Alfredo Lagmay and Virgilio Enriquez led this effort in psychology. After Lagmay became the chair of the psychology department at the University of the Philippines in Manila, Enriquez returned to the Philippines from the United States, where he had received his doctoral degree. Together the two men created Sikolohiyang Pilipino ("Filipino Psychology"), which is intended to decolonize the Filipino psyche after the long period of Western domination. The formal beginnings of this movement were established at the first National Conference on Filipino Psychology, held in 1975 and chaired by Enriquez.

Lagmay and Enriquez founded the Philippine Psychology Research and Training House, where hundreds of students engaged in developing Sikolohiyang Pilipino. The development of research methods that accord with Filipino culture is one of the most singular innovations of Sikolohiyang Pilipino. Enriquez established the technique of "groping" toward an appropriate design and methodology as the project moved forward, rather than beginning with a strategy and shaping the questions to fit the methods a priori. Rooted in Filipino culture and history, Sikolohiyang Pilipino emphasizes that psychological knowledge arises from the collaborative demands of relationships and not strictly from an individual psychological development. One must see the participant as another human being, not as a data point, and begin to build trust and genuineness before proceeding with data collection.

Enriquez and Lagmay insisted that Filipino values must be at the center of Sikolohiyang Pilipino. Thus the study of a sense of propriety (*hiya*), gratitude and solidarity (*utang na loob*), and, most important, shared identity (*kapwa*) assumed prominence. Kapwa, for instance, leads us to treat others as fellow

human beings, worthy of respect; whether that person is an insider or outsider determines the kind and level of interaction. Sikolohiyang Pilipino remains a vibrant force in the Philippines today.

SEE ALSO Confucian Psychology (c. 500 BCE), Culture-Bound Syndromes (1904), Cultural Relativism (1928)

Community members helping to move a house to a new location—a volunteerism tradition still practiced in the Philippines today. The image illustrates the close connection between culture and psychological constructs that are part of Sikolohiyang Pilipino.

Biopsychosocial Model of Health

1977

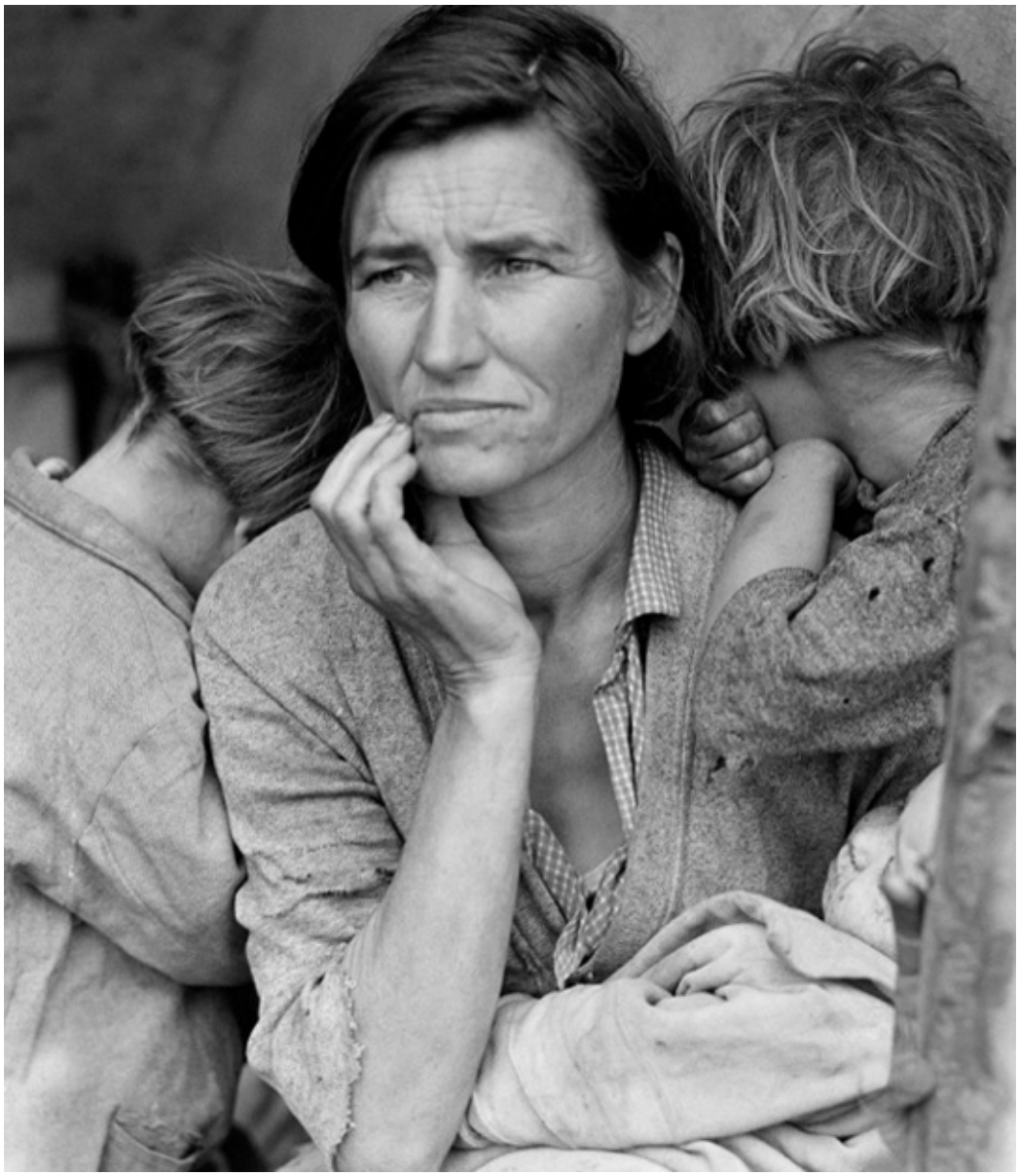
George Engel (1913–1999)

By the early twentieth century, a model of health and illness focused strictly on the biochemistry and the physiology of a disease became dominant in Europe and North America. Even so, throughout the twentieth century there were those who attempted to broaden medicine to include social and psychological factors also. In 1977, physician George Engel proposed the biopsychosocial model of disease and health. Engel was influenced by his long association with psychiatrist John Romano as well as the research conducted by endocrinologist Hans Selye on the effects of **Stress** on the human body. Engel also drew on the general systems theory of biologist Ludwig von Bertalanffy.

Due to his rigorous medical training, Engel was quite skeptical of what he called the "laughable" concepts of **Psychosomatic Medicine** in the late 1930s. However, after working with Romano for a number of years, he began to accept that psychological factors were important in some disease states. He developed his first original theory relevant to his later work in his conservation-withdrawal model of the 1950s. The model considered threats to the organism, especially interpersonal threats like the loss of relationships, as possibly eliciting withdrawal, followed by depressed physiological functioning. Disrupted relationships were potentially powerful enough to cause serious illness.

Despite the shortcomings of the model, Engel continued to think about the importance of relationships for health. He moved beyond the patient's personal relationships to include the doctor and patient, and then to relationships on the macro level: the hospital, the neighborhood, the city, and so forth. He suggested that the health of a human being is shaped by all these relationships. When Engel published his model in *Science* in 1977 it was immediately controversial; eventually it was accepted by many health-care professionals, especially by psychologists in the new fields of health psychology and behavioral medicine.

SEE ALSO Psychosomatic Medicine (1939), Stress (1950), Mind-Body Medicine (1993)



The famous Migrant Mother *photograph of impoverished pea picker Florence Owens Thompson and her family, 1936, evokes the impact of the Great Depression on common Americans.*

Stages of Adult Cognition

1977

K. Warner Schaie (b. 1928)

For most of the twentieth century, developmental psychology research focused on infants and children, but as the American baby boomers aged, there was a corresponding increase of interest in adult development. By the late twentieth century, research on cognition, emotion, and social relations had established that there were important developmental differences at each stage of life. An exemplary model of this research is the work undertaken in 1977 by psychologist and social gerontologist Warner Schaie, who described the ways in which thinking changes over the life span. Adults think differently from adolescents, and our cognition continues to change as we age. Broadly, our thinking moves from "What should I know?" to "How should I use what I know?" to "Why should I know?"

From our early years through **Adolescence**, we are acquiring knowledge. As we move into adulthood, our thinking changes. Schaie proposed six stages of adult cognition. In early adulthood we are in the *achieving stage,* in which we use our intellectual abilities to help us reach our goals, perhaps to become the manager of a large establishment.

As we move into middle adulthood, our intelligence may change toward an integration of our career goals with social responsibilities, such as families. This is the *responsible stage* of adult cognition. Also in the middle adult years some individuals may take on responsibilities that demand complex thinking. In this *executive stage* a person is concerned with larger social systems, such as governing a university or leading a large company.

In later adulthood's *reintegration stage,* a person's thoughts may turn to trying to make sense of life and its purposes. It is in this stage that a person may attempt to integrate the many ups and downs of a single life with larger questions of meaning and purpose. With advancing age, we enter the *reorganization stage,* and our intellectual abilities turn toward restructuring our lives after retirement in light of diminished health or resources. Finally, for some

there is the *legacy stage*, in which we anticipate the end of life. Now a person's intellectual resources turn toward creating a legacy, perhaps through a memoir, establishing a trust fund, or donating his or her body for scientific research. The work of Schaie and others has led to changes in American social policy for the aging American population.

SEE ALSO Moral Development (1958), Seasons of Life (1978), Ecological Systems Theory (1979), *Stages of Faith* (1981)

An elderly couple appreciates life's simple pleasures in this 1904 painting by Czech artist Jaroslav Špillar.

Seasons of Life

1978

Daniel Levinson (1920–1994)

"What have I done with my life? What are my central values, and how are they reflected in my life?" These questions and others like them were posed by psychologist Daniel Levinson in his landmark book *The Seasons of a Man's Life* (1978). Levinson conducted a longitudinal study of forty men and found that as they approached the age of forty, such existential questions were likely to surface. Later research with women found many of the same types of issues were present. Levinson concluded that it was these kinds of questions and the underlying psychological issues they raised that led Americans in midlife to make important, sometimes dramatic, changes in their lives. Some left their careers for new professions, some divorced and remarried, and some reoriented their lives to seek deeper spiritual values.

Psychologists such as Levinson studied adult development changes scientifically, but the concept caught on in the popular press, too, with books like *Passages* (1976) by Gail Sheehy. For some American adults, middle age is best described as a midlife crisis. By the 1980s, a growing body of literature both scientific and popular described the changes that American baby boomers were going through. The research showed that only about 12 percent of American men experienced midlife as an existential crisis that made them aware of the need to make important changes, while about 30 percent were dissatisfied with their lives but blamed others for their problems.

Women, surprisingly, did not generally report midlife as a time of crisis. Rather, with children approaching adulthood and with fewer responsibilities at home, many American women found middle age full of new opportunities.

In more recent years, psychologists and others have suggested there are other options in adult development. Many believe that adults face one of four developmental choices: positive adult development, directionless change, stasis, or decline. None of these outcomes is inevitable, but rather is the result of multiple decisions made over the course of a lifetime.

SEE ALSO Stages of Adult Cognition (1977), Ecological Systems Theory (1979)

The proverbial middle-aged man in a red convertible has come to symbolize the midlife crisis in our culture.

The Golden Cage

1978

Hilde Bruch (1904–1984)

In the Middle Ages, holy anorexia was the ascetic practice of not eating in order to become closer to God; Catherine of Siena was the best known of the holy sufferers. But an idealized body shape appears to be the modern motivation for this mind-set. Anorexia nervosa and bulimia nervosa are the most common modern eating disorders; both occur more frequently in women. The typical age of onset is between fifteen and twenty-four. The prevalence of eating disorders has risen dramatically since the 1950s in Western nations.

Anorexia is characterized by an obsession with weight control, marked by excessive dieting, use of laxatives, self-induced vomiting, enemas, and exercise, with the result that body weight drops below the optimum level for health and body image becomes distorted. Bulimia is marked by cycles of binge eating and purging with the use of laxatives, self-induced vomiting, and other extreme measures; bingers report feeling out of control and unable to stop their binge eating. At least 4 percent of women in Western countries may develop an eating disorder severe enough to warrant professional treatment.

It is not known what causes eating disorders, but media portrayals of the "ideal" woman as thin and the objectification of women as sexual objects play roles. Hilde Bruch, a German American physician, was one of the first to offer a psychological explanation and treatment for eating disorders in her famous characterization that young women with eating disorders are like birds in a golden cage. The phrase came from one of her patients, who stated that she was "a sparrow in a golden cage," unworthy of her wealthy family. Bruch argued that a primary cause of anorexia is the patient's false belief that she is failing to live up to her own and her parents' expectations. Based on her clinical research, Bruch suggested that girls with conforming personalities are vulnerable to eating disorders when there are internal or familial expectations of independence. If they feel that they are failing in their efforts, then they may express their independence in the only way they feel they can, through controlling their

eating. Bruch's psychotherapy sought to help both the patient and her parents gain insight into family dynamics and begin to move toward healthy family functioning. Only then could the little bird leave the golden cage. Both cognitive and family therapies have proven effective in the treatment of the disorder.

SEE ALSO Family Therapy (1950), Cognitive Therapy (1955)

The prevalence of eating disorders, including anorexia nervosa, has risen dramatically since the 1950s in Western nations, thanks in large part to the media's portrayal of the undernourished woman as ideal.

Theory of Mind

1978

David Premack (b. 1925)

The ability to imagine what other people feel or think and to respond accordingly is one of the most important accomplishments of social development. Modern developmental science has been intensively studying this ability in infants, children, chimpanzees, and even rodents for about thirty years.

Developmental psychologists call this ability theory of mind (ToM). It is a principle that can be found in several of the world's major religions, but in psychology, David Premack and Guy Woodruff offered one of the first full expressions of ToM in 1978. Formally, theory of mind refers to children's understanding that others also have thoughts, beliefs, objectives, and emotions. Without ToM, the child would not be able to pick up on the social cues or intentions of others, as is often the case when a child suffers from **Autism**.

Theory of mind is a developmental process that, in normally developing children, is usually fully in place by about age four or five. Scientists have found that the critical precursors of ToM occur as early as seven to nine months as the infant learns that the attention of others can be directed by simple tasks like pointing or reaching. By the end of the first year, infants are beginning to understand that people have intentions. But it is not until about age four or five that children truly understand that there is a link between how others feel or think and what they do.

Neuroscientists using brain-imaging techniques have shown that this is exactly the age when the prefrontal cortex of the brain is rapidly maturing. For children with autism, this is not the case, although there are interventions that can help improve the brain's responses in children with autism.

Theory of mind is crucially important for displaying empathy and caring for others. It makes it possible for us to be socially competent. Research on ToM has greatly facilitated our understanding of children's social development, with implications for emotional and cognitive development. It is also a principle that facilitated the reception of mirror neurons.

SEE ALSO Genetic Epistemology (1926), Mirror Neurons (1992)

By age four or five, normal children learn that a person's actions link to what they feel and think—a crucial step in the development of empathy and social competence.

Ecological Systems Theory

1979

Urie Bronfenbrenner (1917–2005)

American developmental psychology was once characterized as “the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time.” The person who made that statement—Urie Bronfenbrenner—also offered an alternative to such an unnaturalistic approach.

One of the preeminent American psychologists of the twentieth century, Bronfenbrenner was born in Russia and “developed” in the United States. By the late 1960s, he was chafing at the narrow, artificial approach that then characterized American developmental psychology. To create what he called the ecology of the child, he borrowed from systems theory, which posits that to study any phenomenon, one must consider it in relation to its broader contexts. His fully articulated theory was published in 1979 as *The Ecology of Human Development.*

Bronfenbrenner proposed that human development occurs within four nested systems and that each must be considered both alone and in relation to one other. The *microsystem* is the child’s personal environment, made up of parents, peers, and the institutions that the child directly interacts with. The *mesosystem* is the system of interactions among the various components of the microsystem, such as parents and teachers, parents and the child’s peers, or the family and religious institutions. The next level of complexity is the *exosystem*; these are the contexts that affect development but with which the child does not directly interact. An example would be the work situations of the parents, which could have an influence on the child in terms of day care, or the fact of having a parent who travels a lot for work. Finally, the *macrosystem* is the larger cultural or national situation that the child lives within, such as the level of governmental support for higher education, which could shape the child’s choices.

The ecological model has provided a rich metaperspective on human development. It has made it possible to think broadly about the complexity and richness of the ways in which our lives are shaped.

SEE ALSO Psychological Lifespace (1935), Head Start (1965), Stages of Adult Cognition (1977), Seasons of Life (1978)

President George H. W. Bush plays with children in a jungle gym at the Emily Harris Head Start Center in Catonsville, Maryland, where he announced a proposed increase of $600 million in funding for the program in 1992. Launched in 1965, the Head Start Program illustrates the close connections among the different influences on children's development proposed by the Ecological Systems Theory.

Social Identity Theory

1979

Henri Tajfel (1919–1982)

Is prejudice primarily due to personality factors, or do group membership and collective identity play the most prominent roles? Social psychologist Henri Tajfel argued for the importance of group membership in generating prejudice. Tajfel was born in Poland to Jewish parents, but left Poland to study in Paris for his graduate degree. He was there when World War II began, so he enlisted in the French army. He was captured and spent the remainder of the war in Nazi concentration camps. When the war was over, he discovered that his entire family had been killed by the Nazis. These experiences led to his research program on intergroup behavior and how prejudice forms.

Based on his wartime experience, Tajfel believed that prejudice and hatred are influenced by the groups we belong to. His early research on categorization showed that grouping objects into categories labeled A and B led to false judgments of similarity within each group and an exaggeration of difference between the groups. Building on this research, Tajfel found that merely classifying people into one group or another led to bias. Participants began to assert the superiority of their own group and to diminish the other group. He and his student John Turner published a full theory of social identity in 1979 in a book chapter entitled “An Integrative Theory of Intergroup Conflict.” After Tajfel’s death in 1982, Turner added new material from Tajfel’s research and published it in 1986 as “The Social Identity Theory of Intergroup Relations.”

Tajfel used his research results to argue that we derive our social identity from group membership, and we then use group membership to enhance a positive view of ourselves. One way we do this is to join groups that give us a positive identity; another way is to claim that the groups to which we belong are the best. To further bolster our positive self-view, we tend to overstate how different our group is from another. Group membership has a positive effect on our self-view, but it may also lead us to discriminate and form prejudices against members of other groups.

SEE ALSO Conformity and Independence (1951), Contact Hypothesis (1954)

The endless procession of German prisoners captured with the fall of Aachen march through the ruined city streets to captivity, October 1944. Social psychologist Henri Tajfel's experience as a prisoner of war during the Holocaust inspired his inquiry into intergroup behavior and prejudice.

Hardiness

1979

Suzanne Kobasa Ouellette (b. 1947)

In the 1970s, psychologists became very interested in the connections between personality and health. Suzanne Kobasa (now Suzanne Kobasa Ouellette) at the University of Chicago drew upon earlier concepts such as strenuousness (William James), productive orientation (Erich Fromm), the fully functioning person (Carl Rogers), self-actualization (Abraham Maslow), and competence (Robert White) to study possible links between personality, **Stress**, health, and disease. Based on her research, Kobasa suggested that a personality trait, which she termed *hardiness*, could play an important role in maintaining health. Her 1979 article, "Stressful Life Events, Personality, and Health: An Inquiry into Hardiness," stimulated numerous other investigations into the role of personality in helping humans manage stress.

The opportunity to explore these possible linkages came when the federal government mandated that the American Telephone & Telegraph Company (AT&T) restructure itself, which required that Illinois Bell Telephone (IBT) be spun off from the parent company. Kobasa surveyed IBT managers about how they handled the restructuring, which included significant layoffs. She found that the stress of the events had widely differing effects that varied by personality. For many of the managers there was little connection to illness or other negative effects. Kobasa suggested that certain attitudes or personality traits may have moderated the effects of stress. Her follow-up studies found that hardiness, along with social support and physical exercise, seemed to provide protection against stress-related health problems.

Like such pioneers as James, Fromm, and Maslow, among others, Kobasa suggested that our personalities are important in every domain of our lives. Hardiness, Kobasa argued, consists of three attitudes: *commitment, control,* and *challenge.* Commitment means being oriented toward involvement with others and with the events of life, in contrast to detachment and isolation. Control means seeking to influence and shape one's life rather than being passive, while

challenge indicates that a person wants to learn from life experiences, even when these are not positive. With this conceptualization, Kobasa made a major contribution to our understanding of how our personalities may influence our health.

SEE ALSO Resilience (1973), Psychoneuroimmunology (1975), Biopsychosocial Model of Health (1977), Mind-Body Medicine (1993)

F. W. de Klerk (left), the last president of apartheid-era South Africa, and Nelson Mandela (waving), his successor, wait to speak to a crowd in Philadelphia, Pennsylvania, 1993. Perhaps no person alive illustrates the concept of hardiness better than Nelson Mandela.

Nurturant-Task Model of Leadership

1980

J. B. P. Sinha (b. 1936)

A long tradition of leadership studies in Western psychology appeared to establish the superiority and attractiveness of democratic leadership styles. Yet as the scientific discipline of psychology spread across the world after World War II, dissent about this and other matters appeared. In many countries efforts began to develop a psychology that reflected local culture and intellectual traditions, such as **Sikolohiyang Pilipino** in the Philippines.

In India, Jai B. P. Sinha developed an organizational leadership model that was based in Indian familial and social relations; the first full explication of his model was published in 1980 as *The Nurturant-Task Leader*. Sinha earned his doctorate at Ohio State University, where he was immersed in the best American tradition of social psychology. Once back in India, Sinha established himself as an important figure in Indian psychology. He soon realized that the cultural traditions of India provided a better foundation for a nuanced and subtle psychology—the kind best suited for understanding the Indian work environment—than imported Western psychology. Sinha posited that, in India, meaningfulness is inextricably linked to relationships with others and that the goal of life is to find harmony with both nature and society. This is the foundation of the relationship between manager (or leader) and employee as well.

Beginning in the 1970s, Sinha focused on the study of leadership and its role in Indian business. Sinha and his research group showed that Indians respond best to what they called the nurturant-task model of leadership, in which the manager or leader provides high expectations of productivity combined with a nurturing relationship with the worker. In doing so, the leader facilitates the development of the subordinate toward greater self-motivation and less dependence on the leader. Sinha argued that this management style reflects the dependency patterns of Indian culture, the tendency to personalize relationships, and status consciousness, and he showed how using this style could result in

greater productivity on the part of the Indian workforce.

SEE ALSO Cultural Relativism (1928), Sikolohiyang Pilipino (1975)

Statue of Mohandas Gandhi, Washington, D.C., 2008.

DSM-III

1980

After the second edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-II) was revised in 1974 to classify homosexuality as a sexual-orientation disturbance, not a mental disorder, the **American Psychiatric Association** decided to completely revamp its approach to the diagnosis and classification of mental disorders. As a result, the third edition of the DSM (1980) was dramatically different from the two prior editions. The most immediate reason for this change was that psychiatry had become a research-based discipline, and the new leaders wanted a diagnostic manual to guide both research and diagnosis. From this point on, each revision of the DSM has placed great emphasis on the research base of the disorders. A second reason for the revamping was that the association was under pressure to come into closer alignment with the *International Statistical Classification of Diseases and Related Health Problems* (ICD), which is published by the World Health Organization.

Psychiatrist Robert Spitzer was chosen to lead the revision for the third edition. He drew upon the research of the psychiatrists at Washington University (in Saint Louis, Missouri), who had emerged as the leaders of a new laboratory-based psychiatry. For some years, since at least 1960, a growing coterie of young psychiatrists had argued that, if psychiatry was going to continue as a profession, it had to distance itself from psychodynamic (i.e., Freudian) explanations. Thus "neuroses," a vague term in use for over a century, was dropped except as an add-on to a few disorders.

After the development of a draft version of the manual, the National Institute of Mental Health conducted field trials to test its reliability. Despite their findings that most of the diagnoses had poor reliability, the association proceeded with the manual with only cosmetic changes to its language. Published in 1980, the revised manual included 265 diagnoses—a vast expansion of diagnosable conditions—yet many were without solid experimental scientific support. As Spitzer later noted, the lamentable result was that many

people were caught in the net of psychiatric care who were not suffering from a real mental disorder. With each revision—DSM III-R (1987), DSM-IV (1994), and DSM-5 (2013)—the manual has grown larger, encompassing more and more aspects of everyday life.

SEE ALSO American Classification of Mental Disorders (1918)

CHOCKFULL
CEMETERY
WORMS
CEMETERY
OLD SCHOOL
DRUG CURE
NEW SCHOOL
MIND CURE
CALOMEL
STRYCHNINE
Dalrymple.
"WHEN DOCTORS DISAGREE."
MEDICINE MAN. — There ought to be a law passed to squelch you humbugs!
MENTAL HEALER. — I 'm no more a humbug than you are. Neither of us is infallible; but I do far less harm than you do!

Louis Dalrymple's 1898 illustration, "When Doctors Disagree," portrays the age-old conflict between the "Old School Drug Cure" and the "New School Mind Cure," which nowadays reflects the differing philosophies of psychiatrists and psychologists on the ideal method for treating mental illness.

Post-Traumatic Stress Disorder (PTSD)

1980

"The catastrophic stress of combat leaves its marks on the psyche that require both time and confrontation to erase." These words, written in reference to returning Vietnam War veterans, apply equally well to soldiers of earlier and later wars. In World War I, thousands of soldiers on both sides experienced severe psychological distress that was labeled **Shell Shock**. Subsequently, during World War II, hundreds of thousands of young American soldiers experienced what was then called war neurosis or combat fatigue. But the problems of Vietnam veterans seemed more severe and endured for years after they returned home. Higher rates of drug abuse, spousal violence, divorce, and suicide were reported than in the aftermath of earlier wars.

Unfortunately, at the time when the Vietnam War ended, many mental health professionals refused to recognize that the problems of war veterans often persisted after the war. In the then-current edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM), there was no term specific to the symptoms of those who had undergone traumatic experiences, whether of war or natural disasters. Yet it was clear that thousands of Vietnam veterans were suffering and causing real damage to their families and to the social fabric of the country—for example, a sergeant who returned home from Vietnam experienced a flashback that led him to believe that the shopping mall he was in was under attack by the North Vietnamese. In an attempt to repel the "attackers," he shot and wounded several police before being shot himself.

By the late 1970s, veterans joined with survivors of the Nazi Holocaust and other disasters and atrocities to convince the mental health professions that a new diagnostic category was needed—one that could lead to research and effective interventions. Post-traumatic stress disorder appeared for the first time in the **DSM-III** in 1980.

SEE ALSO Hysteria (1886), Shell Shock (1915), Stress (1950)

This powerful photograph from June 1968 shows D. R. Howe (Glencoe, MN) treating the wounds of Private First Class D. A. Crum (New Brighton, PA), "H" Company, 2nd Battalion, Fifth Marine Regiment, during Operation Hue City. PTSD came into usage as a term to describe the psychological effect of combat in Vietnam on many US soldiers.

Stages of Faith

1981

James W. Fowler (b. 1940)

Moses was transformed into a leader by his encounter with God in the burning bush. Similar dramatic transformations of faith occurred in the lives of Buddha, Saint Paul, and Muhammad. Must faith be dramatic, or does it also develop over time so that it is understood and expressed differently at different points in our life journey? In his book *Stages of Faith* (1981), developmental psychologist James Fowler articulated a theory that encompassed both the dramatic and daily aspects of faith development. He drew upon the stages of cognitive development proposed by Jean Piaget and the **Moral Development** theory of Lawrence Kohlberg to formulate his theory of faith development. He posited that there are six potential stages of human faith.

In stage 1, young children express a faith that is guided by imagination and marked by magical thinking about God. Stage 2 is characterized by a faith that embraces the myths and stories of religion as literally true and is typically found from middle childhood on into adulthood. For many, stage 3 is the final developmental stage; it is conventional, primarily concerned with doing what is right to preserve the social world and providing a sense of identity. In stage 4, faith becomes an expression of independent thinking and morality; for example, a white male from the American South may reject the racism of his culture and identify as a social activist for racial equality. In the fifth stage, faith is marked by a greater cognitive complexity, which is able to embrace contradictions while retaining belief in the object of faith. This stage is usually not reached until at least middle age.

Finally, a few individuals develop a faith that embraces justice, compassion, and love on a universal level beyond the dictates of any one religious expression. Such faith may lead to extreme personal sacrifice, even martyrdom, in the service of higher ideals. Mother Teresa, Jesus of Nazareth, and other saintly figures are examples of people who reached stage 6.

Research on stages of faith has found important connections with faith

development and personal identity in **Adolescence**. In adults, research has found that individuals at more mature stages of faith cope better with life-threatening illnesses, as would be implied by Fowler's theory. One such study, reported by Clifford Swensen, Steffen Fuller, and Richard Clements in 1993, found that patients at higher levels of faith development reported higher overall quality of life and more satisfying marital intimacy than patients at lower levels.

SEE ALSO Genetic Epistemology (1926), Moral Development (1958), Seasons of Life (1978)

Gothic Church on a Rock by the Sea *by Prussian painter and architect Karl Friedrich Schinkel, 1815.*

In a Different Voice

1982

Carol Gilligan (b. 1936)

How do people resolve real-life moral dilemmas? This was the question that intrigued Carol Gilligan when she came to Harvard as an instructor of psychology in the late 1960s. Her interest was sparked by Lawrence Kohlberg's research on **Moral Development**. Kohlberg's work had shown that women do not generally exhibit the highest level of moral reasoning, termed "justice-oriented reasoning," as often as men. But Gilligan wanted to take her research in a different direction. Whereas Kohlberg's participants had responded to hypothetical moral dilemmas, Gilligan decided to interview participants facing the real-life dilemma of whether or not to terminate a pregnancy.

In the course of conducting her research, she had a startling insight: the reason women scored lower in Kohlberg's scheme was because it was based entirely on results from male participants, yet it was taken to represent a universal standard. By including only men in his studies, he had missed other styles and forms of reasoning. Gilligan described the style of reasoning she heard in her participants' accounts as an "ethic of care"; that is, women repeatedly told her that their decisions about whether or not to have an abortion were based on the value of remaining in a relationship and not inflicting pain on others.

She wrote up her study and her conclusions in the landmark book *In a Different Voice: A Psychological Theory of Women's Development*, published in 1982. In it she argued that women's moral decision-making processes did not map well onto prevailing psychological theories constructed within an all-male framework. She outlined the ethic of care and suggested that although it was more commonly used by women, we should seek to make it a more prominent part of all human development. Her work continues to influence the debate about gender differences, but perhaps more important, it exposed the deeply androcentric basis of much of psychological theory up to that time.

SEE ALSO Moral Development (1958), Gender Identity (1963)

Desire (Reverie) *by German painter and architect Heinrich Vogeler, c. 1900. Carol Gilligan initiated what is now a major project to articulate important gender differences in development, especially around moral issues.*

Multiple Intelligences

1983

Howard E. Gardner (b. 1943)

One of the oldest arguments in modern psychology is whether intelligence is a single ability, commonly known as g or the g factor, or is better understood as a group of several distinct cognitive abilities. In the United States, the single-ability view was dominant for most of the twentieth century. But in the seminal publication *Frames of Mind: The Theory of Multiple Intelligences* (1983), psychologist Howard Gardner changed the conversation about the nature of intelligence.

Gardner has noted that it was his training in the arts that led him to reconsider the notion of a single intellectual ability. He became involved with Project Zero, a program at Harvard's Graduate School of Education that sought to improve education in the arts and promote it as a method of learning about and knowing the world. Later work on brain functioning in people suffering from a brain injury helped him link cognitive development, the arts, and how the brain works. From this association he proposed that there are seven distinct intelligences: musical, logical-mathematical, linguistic, spatial, bodily-kinesthetic, understanding, and social understanding. In 1999, he proposed that there may be at least three more intelligences: moral, existential, and naturalist. Each has its own neurological brain network, as evidenced by the fact that a person can suffer an injury and lose one kind of intelligence while the others are fully functioning.

Culture also plays an important role in the expression of our intelligences. In some societies, such as in sub-Saharan Africa, social understanding is highly valued, and a person who displays a high degree of social understanding is considered very intelligent. In Western societies, linguistic intelligence is highly valued, and a person will be considered very smart if he or she displays high-level language skills.

Gardner's theory has been highly influential in changing how American educators think about the educational needs of children. Because of his successful challenge of the traditional theory of a single intelligence, the door

was opened to other models of intelligence, such as Daniel Goleman's emotional intelligence.

SEE ALSO Social Ontogenesis (1992)

Ballet, As Seen from a Box *by French artist Edgar Degas, 1885. A challenging performance art involving precise movements and pointe technique, professional ballet demands years of instruction and superb kinesthetic intelligence.*

The Flynn Effect

1984

James R. Flynn (b. 1934)

Is the world getting smarter? In 1984, Jim Flynn, a professor of political science in New Zealand, claimed that his research showed that scores on intelligence tests were rising around the world. Many scientists were quite skeptical when Flynn first made his claim, but further research and many follow-up studies have confirmed it. The rate of gain in intelligence quotient (IQ) scores has been about three points per decade, and it has been found in many different countries, from relatively undeveloped countries to very affluent ones.

If this is true, it cannot be explained as a change in the genome; evolution simply does not work at such a fast rate. So while genes definitely contribute to intelligence, they cannot explain the so-called Flynn effect. Although there is no general consensus on why the Flynn effect occurs, one possible explanation is that people worldwide are now more familiar with school curricula and test taking. However, it is most likely that the changing environment has been the major contributor to rising IQ scores. For example, in many parts of the world there have been major advances in nutrition and health care. This would help account for improved scores in those parts of the world where such gains have been made—but what about developed and affluent countries, where the same IQ increase has occurred? One possible explanation is that with every generation, children are growing up in an increasingly information-rich environment. Our cultures are more sophisticated and complex than ever, and we are exposed to multiple perspectives on any one topic throughout our lives.

Of course, the Flynn effect has been controversial. Ongoing research has found mixed results, with some British results indicating a decline in IQ scores among adolescents since the 1990s, even while the scores of children below the age of ten have increased. Thus while the Flynn effect has been demonstrated, much remains to investigate about the relation between intelligence and changing cultural and demographic norms.

SEE ALSO Psychological Tests (1890), Binet-Simon Test of Mental Levels (1905), Wechsler-Bellevue Intelligence Scale (1939), Behavior Genetics (1942), Head Start (1965)

Health and Human Services Secretary Kathleen Sebelius reads to a group of four-year-old Head Start students at the Judy Hoyer Early Learning Center at Cool Springs Elementary School in Adelphi, Maryland, 2011. The reason for the rise in intelligence test scores is fiercely debated, although the implementation of such programs as Head Start has certainly contributed.

Touch Therapy

1986

Tiffany Field (b. 1941)

Humans have been touching each other for as long as there have been humans. Touch was an essential part of ancient healing practices, as anthropologist Ashley Montagu showed in his landmark book *Touching: The Human Significance of the Skin* (1971). For centuries in medieval Europe, it was believed that the touch of the monarch, the royal touch, could bring healing to the sick. But it was not until recently that scientific studies of touch have begun to show us its importance for our health and our survival.

When psychologist Tiffany Field's first child was born prematurely, she found that stroking her baby was beneficial to her daughter's growth and development. Curious, she began to research the effect of touch, first on premature infants and then on people suffering from a variety of illnesses. Her first major study of the effect of touch on preterm infants, published in 1986, found that the massaged infants averaged a 47 percent weight gain. In addition, they were more active and alert when awake and demonstrated a greater range of behaviors than neonates who were not massaged. Surprised, she continued this research, and what she found has revolutionized our understanding of the power of touch.

In 1982 the common hospital practice in Western societies was to place premature infants in an incubator and, apart from basic care, leave them alone. It was thought that touch irritated or overstimulated them. Field's observation of her child's growth and subsequent research changed all that. In one of her first studies, Field and her colleagues found that, when a premature infant is gently massaged on the back or its limbs for fifteen minutes three times a day, the infant gains weight almost 50 percent faster than infants who are not massaged; this was true even though the infants did not receive more food than the others. This initial research and other studies that followed also showed a beneficial effect for the development of the nervous system, and these gains were maintained. This work led to an important change in hospital practice: now parents are encouraged to hold and massage both their premature and normal-

term infants.

Since this early research, therapeutic touch has been shown to improve attention, relieve depression, reduce pain, and even improve immune functioning in infants and adults. It is clear that touch is so critical that without it our survival may be in doubt.

SEE ALSO (Surrogate) Mother Love (1958), Attachment Theory (1969), The Strange Situation (1969)

Studies by psychologist Tiffany Field have shown that massage promotes beneficial effects for infants, including weight gain, improved immune functioning, and increased physical activity.

Triangular Theory of Love

1986

Robert J. Sternberg (b. 1949)

Although the topic of love was not frequently addressed by Western psychologists until the second half of the twentieth century, it of course has been a subject of interest among humans of all cultures for millennia. But our modern conception of love and marriage is not only a construct of Western societies but also fairly recent.

Western concepts of love have been molded by at least two thousand years of philosophy, religion, and custom, with the result that romantic and consummate love are our highest ideals. While other traditions also embrace romantic love, there may not be a strong emphasis on it as the basis for marriage. This is the case in Hindu societies, where partners may be chosen by parents and the expectation is that romantic love will grow over time.

In the Middle Ages, lovesickness was viewed as problematic, and couples were encouraged to focus on more important commitments, such as to the church, their parents, and their communities. Among the aristocracy in this period, adultery was considered the highest form of love. Our modern conception of love emerged in our relatively recent past.

Psychologist Robert Sternberg proposed a triangular theory of love in 1986. The three facets of love in his model are intimacy, passion, and commitment. Intimacy is crucial because love is based on knowing a person; passion, desire, and sexual arousal are also critical; and the decision to stay together is the cognitive basis for commitment and lasting love. Sternberg suggests that each of these aspects of love will wax and wane over the course of time. Sexual attraction is thought to be vital to the success of the relationship, at least initially. As one psychologist suggested, “Love is 90 percent sexual desire not yet satisfied.”

The triangular theory of love can potentially describe all types of love. For example, romantic love is a combination of intimacy and passion, companionate love is a combination of intimacy and commitment, and consummate love is the

type that involves all three.

SEE ALSO Universal Expression of Emotions (1971)

Romantic love is portrayed in Italian artist Francesco Hayez's The Kiss, *1859.*

Liberation Psychology

1989

Paulo Freire (1921–1997), **Ignacio Martín-Baró** (1942–1989)

In the mid-twentieth century in Latin America, popular protests against poverty and the lack of attention to the needs of the poor and marginalized gave rise within the Roman Catholic Church to a movement called liberation theology. Running parallel with theological developments at the time, liberation psychology emphasized the use of social science to achieve community action and justice. Of the many psychologists involved, none was more important than the Jesuit psychologist Ignacio Martín-Baró. He argued that true knowledge is concerned with transforming the conditions of the oppressed. This kind of psychological knowledge, he said, was a force for liberation.

Martín-Baró drew on the earlier work of Brazilian Paulo Freire and his concept of conscientization, or gaining a critical consciousness about how political structures can oppress the human mind. Recognition of this oppression can lead to personal psychological growth and efforts to make a more just society, which opens up new ideas for what is possible, not just personally but for civilization. Because the government perceived his work as threatening to their regime, Martín-Baró was assassinated along with six of his Jesuit brothers by a US-trained Salvadoran death squad in 1989. His work continues and now is an important theoretical and practical force around the world.

Following Martín-Baró, contemporary liberation psychology seeks to serve the needs of everyday people. The power of Martín-Baró's ideas and practices is clear from the fact that he was assassinated. In his view, psychology, in theory and practice, must be oriented toward the deep social problems of Latin America. In one of his essays, translated into English after his death, he wrote:

> If as psychologists we wish to make a contribution to the social development of Latin America, we have to redesign our theoretical and practical tools from the standpoint of the lives of our own people, from their sufferings, aspirations, and struggles. We must affirm that any effort

at developing a psychology that will contribute to the liberation of our peoples has to mean the creation of a liberation psychology.

SEE ALSO Black Psychology (1970), Sikolohiyang Pilipino (1975)

SEGUNDO MONTES MOZO
IGNACIO MARTIN-BARÓ
SACERDOTES JESUITAS, CATEDRATICOS
DE LA UNIVERSIDAD DE "EL SALVADOR"
MURIERON POR SUS IDEALES, JUSTICIA,
LIBERTAD Y PAZ EN SAN SALVADOR, EL
DIA 16-11-1989
RECUERDO DE SU CIUDAD NATAL
AYUNTAMIENTO DE VALLADOLID

This plaque sculpture pays tribute to two Jesuits from Valladolid, Spain—Segundo Montes and Ignacio Martín-Baró—who died for the ideals of justice, freedom, and peace in San Salvador, November 16, 1989.

Animal-Assisted Therapy (AAT)

1990

The use of animals to improve the psychological and behavioral health of humans probably dates to prehistory. The domestication of dogs, cats, and other animals brought with it pleasure, affection, and the reduction of **Stress**. We know from estate records that animals were used in early asylums to improve patients' mental health. For example, at the York Retreat in England (founded in 1792), the founder, William Tuke, used farm animals as part of the patients' treatment. The Delta Society (now called Pet Partners) was formed in 1990 to help professionalize the use of pets for therapeutic ends. The range of animals used for therapeutic purposes is impressive: dogs, cats, birds, elephants, rabbits, horses, dolphins, and others.

These formal approaches began after years of health psychology research consistently showed that pet owners experience better overall physical health and emotional well-being than people who do not own pets. To date, positive results have been shown for the use of pets to manage **Autism** spectrum symptoms, reduce anxiety in elderly hospitalized patients, and to reduce behavioral problems of children with developmental disorders.

In North America, the correct term for the professional use of animals for therapeutic purposes is *animal-assisted therapy* (AAT). AAT therapists are certified health-care professionals who develop individualized treatment plans with specific goals. Therapeutic interventions are diverse and include animals as cotherapists who are simply present with the human therapist and client. Other treatments include the use of pets to reduce fear and stress prior to a painful medical procedure, as when a child undergoes surgery. In these types of interventions, the child is allowed to pet and play with the animal until the fear is reduced. Treatment settings also vary, from traditional private therapy rooms to mental hospitals, prisons, schools, and nursing homes.

Similarly, animals are also used to improve quality of life for residents of long-term care facilities. In these uses, volunteers may simply bring their pets to the facility so that the residents can socialize with the animals. There is also a

related field known as pet therapy, which is intended to help reduce pets' behavior problems.

SEE ALSO Stress (1950), Mind-Body Medicine (1993)

Siobhan McConnell pets Rear Adm. Laura Lee while waiting to visit her son, Army Pfc. Derek McConnell, at Walter Reed National Military Medical Center, 2011. Laura Lee is one of three therapy dogs at the hospital who spend their days working and visiting with patients, families, and staff.

Flow

1990

Mihaly Csikszentmihalyi (b. 1934)

What might being completely absorbed in gardening and being “in the zone” while playing basketball have in common? They may both indicate that an individual is experiencing flow, a state of being so at one with the moment that a person is said to be living optimally. Flow is, according to psychologist Mihaly Csikszentmihalyi, who identified the phenomenon, the hallmark of what it means to have a good life. Like Abraham Maslow’s “peak experience,” flow is an experience of full engagement with the moment one is in.

The research that led to the concept of flow began in the 1960s, when Csikszentmihalyi was studying the creative process in visual artists. He noticed that artists often painted with a single-minded persistence that seemed to defy fatigue and hunger. Yet when the painting was complete, the artists often had little interest in it. It was as though the act of being absorbed in the painting was the reward. Csikszentmihalyi then set out to systematically study this hypothesis. He found that the experience could occur during almost any activity in almost any field, such as the arts, sports, or medicine.

Csikszentmihalyi’s research indicated two conditions that make flow likely. The first is that the activity must stretch a person’s skill level; that is, a person must experience the activity as a just-manageable challenge. Second, there must be opportunities for continuous feedback that allow for constant adjustment as the activity proceeds. Once these conditions are met, a person experiences a subjective state marked by a focused concentration that merges awareness and action. Time seems to pass quickly, because the person seems to forget about himself or herself as an entity separate from the activity. When in flow, a person finds the activity itself intensely rewarding, apart from the immediate result.

There have been attempts to structure environments to enhance the likelihood of the flow experience. The Key School in Indianapolis created the Flow Activities Center, where schoolchildren can pursue activities that interest them without teachers or other adults imposing demands on them. One study of the

center indicated that the children who participated reported increases in intrinsic motivation regarding their education. There are now numerous sites where flow principles have been introduced, including the Getty Museum in Los Angeles, a Nissan assembly plant, and a psychotherapy practice in Milan, Italy.

SEE ALSO Hierarchy of Needs (1943), Humanistic Psychology (1961), Positive Psychology (2000)

The J. Paul Getty Museum in Los Angeles, California, incorporates many architectural features that reflect and promote the principles of flow.

Mirror Neurons

1992

Giacomo Rizzolatti (b. 1937)

Monkey see, monkey do? It turns out that monkeys, humans, birds, and other species have specialized brain cells that are exquisitely sensitive to the actions of others. These brain cells are called mirror neurons, and they represent an exciting new field of psychological science for the twenty-first century. Mirror neurons were first discovered by neuroscientist Giacomo Rizzolatti and his colleagues at the University of Padua. Their first attempts to publish their findings were rejected because the journal thought they would not be of interest to other scientists! (The paper was eventually published in 1992.)

What Rizzolatti found was that these neurons fire (or become active) when an animal or person observes another animal or person, even a member of a different species, performing an action. This is how they got their name: they mirror the actions of other neurons and fire as if they were performing the action themselves. For example, when we see another person reaching for a cookie, our brains act as though we are reaching for a cookie. This indicates that there are direct brain links between our perceptions and our actions. In humans, it is thought that the mirror system develops in the first year of life and has links with infant imitation and interaction with caregivers. There are many nuances about mirror neurons that have now been discovered. One is that the intensity of mirror neuron activation is related to the motor skills of the observer. So if you are a really good tennis player, then the neurons in the mirror network of your brain fire more intensely when you are watching Roger Federer than they would in the brain of someone who is less skilled at tennis.

Scientists and philosophers are very excited by mirror neurons. It is thought that we now may be able to better understand empathy, **Autism**, language, and the intentions of others through research on these specialized brain cells.

SEE ALSO Theory of Mind (1978)

Mirror neurons fire when an animal or person observes another animal or person performing an action, playing a role in theory of mind (ToM) development.

Social Ontogenesis

1992

A. Bame Nsamenang (b. 1951)

With the notable exception of South Africa, the discipline of psychology was not well established in sub-Saharan Africa until the late twentieth century. Until the work of Professor A. Bame Nsamenang and a few others was brought to light beginning in the 1980s, most African psychology mirrored the individualistic perspective of Westerners. Nsamenang, however, developed a theory of human development grounded in the sociocentric worldview of most African societies. In his book *Human Development in Cultural Context: A Third World Perspective* (1992), Nsamenang argued that African theories of human development place primary emphasis on social ontogenesis; that is, development occurs as the individual participates in the cultural activities of the community.

An African view of development incorporates both metaphysical and experiential phases. The spiritual self begins with conception and ends when a person is given his or her name. The experiential self then takes over and carries a person through to biological death. The final stage is ancestral selfhood, in which the self continues in the memories and rituals of the living. In some cultural expressions, it may be reincarnated.

Experiential selfhood is the domain of social ontogenesis. It comprises seven stages: the newborn, a period of social priming, followed by social apprenticing, then a social entrée, social internment, adulthood, and, finally, death. Each stage has its own developmental tasks framed by the cultural expectations of the community. Development is relational, requiring a connection to the community. In this model, human beings need social responsibility to attain full personhood, and guidance is devoted to helping children become socially responsible.

How is intelligence recognized? As a child develops, he or she is assigned a task that serves the community. Adults and older children monitor how well the child completes the task and thus determine when the child is ready to take on more complex and difficult chores. Intelligence is described in social terms and by a person’s level of social responsibility rather than by an abstract score on a

test.

By the beginning of the twenty-first century, a robust body of psychological theory, research, and application had been established in sub-Saharan Africa. Much of it focused, as Nsamenang did, on human development and its problems in rapidly changing societies.

SEE ALSO Genetic Epistemology (1926), Theory of Mind (1978), Multiple Intelligences (1983)

Four unidentified Masai boys in Seneto Cultural Boma, 2013. Masai are pastoralist people of east Africa who practice the "age set" system of social organization, in which young people of a similar age adopt a collective identity.

Mind-Body Medicine

1993

Bill Moyers (b. 1934)

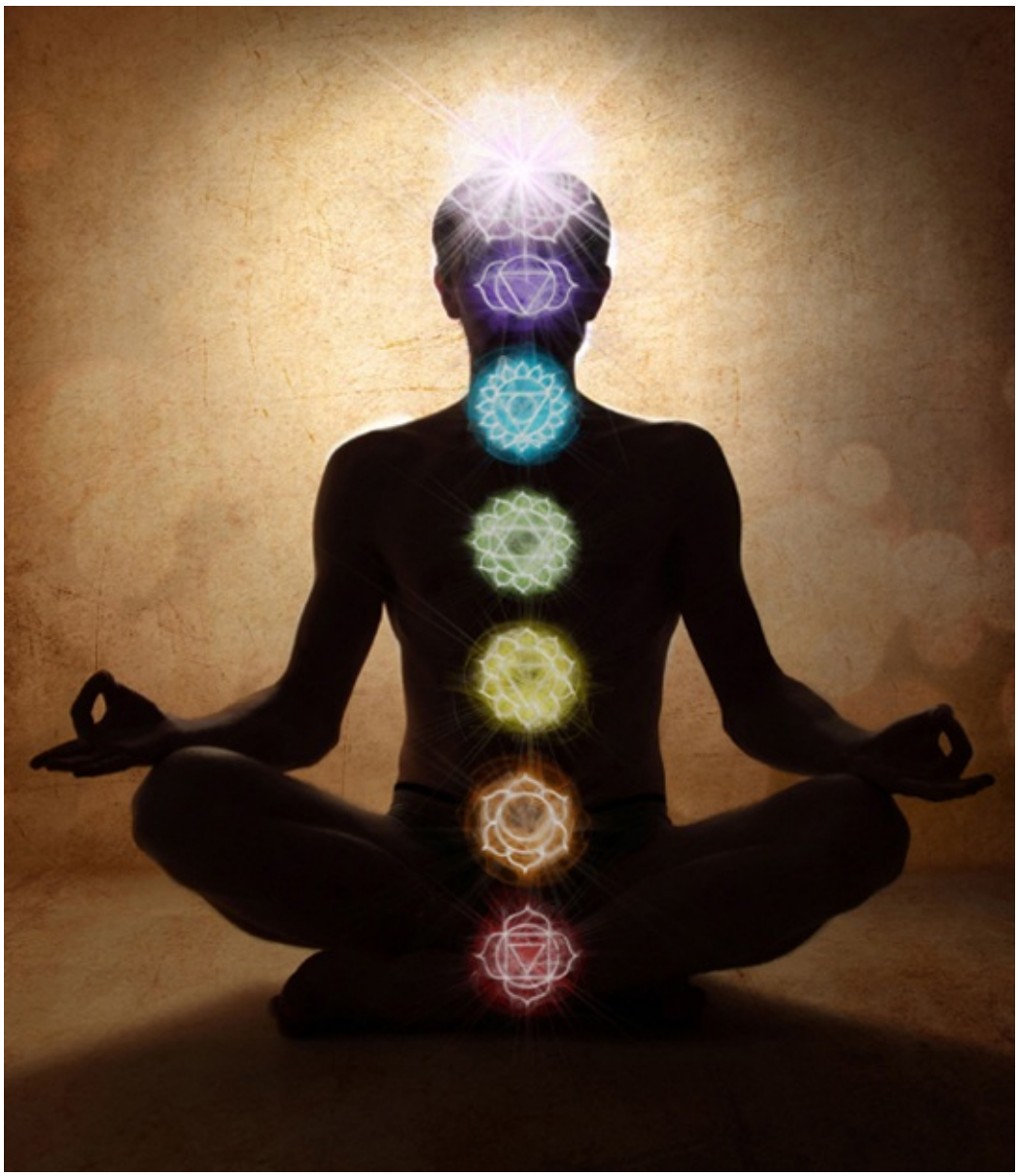
Since the beginnings of recorded history, people have thought of the mind and body as linked in illness and health. Common examples include traditional Chinese medicine, with its concepts of chi and yin and yang, Ayurvedic and Unani medicine from India, and the temples of **Asclepius** in ancient Greece. It was only with the writings of the seventeenth-century philosopher René Descartes that the mind and body were separated to obviate potential religious objections to studying the functions of each. Closer to our own time, the **Mind-Cure** movement in America brought a renewed interest in mind and body relationships.

By the 1990s, the term *mind-body medicine* began to be used to refer to programmatic research and practice that incorporated a variety of techniques that made the whole person the focus of treatment. While no single individual was responsible for this change of focus, Bill Moyers's 1993 book and television series *Healing and the Mind* presented mind-body medicine in a digestible format to millions of people around the world. Moyers's show and book brought information about **Stress** reduction, meditation, the power of the **Placebo Effect**, non-Western healing practices, and other esoteric topics to a mass audience.

The Public Broadcasting Service (PBS) television series had a large viewership, and the accompanying book was a best seller. *Healing and the Mind* became a major influence on the way Americans think about the role of the mind in health and sickness. For example, Moyers introduced Americans to the work of Jon Kabat-Zinn, a molecular biologist and professor at the University of Massachusetts Medical School. Kabat-Zinn founded the Stress Reduction Clinic there in 1979 and has taught hundreds of medical patients how to use Zen Buddhism–based mindfulness techniques to help them deal with their medical conditions. Mindfulness techniques have now spread to many domains of health care, including cognitive behavior therapy. Moyers's influence played a major role in stimulating the US Congress to authorize the National Institutes of Health

to create the Center for Complementary and Alternative Medicine. Thus, by the end of the twentieth century, psychological factors were officially recognized as playing a critical role in maintaining health and preventing disease.

SEE ALSO Mind-Cure (1859), Psychosomatic Medicine (1939), Stress (1950), Placebo Effect (1955), Biopsychosocial Model of Health (1977)



Theories of the mind–body linkage in illness and health date to at least 600 BCE, when the Yoga Upanishads made reference to chakras as psychic centers of consciousness. It was not until the eighth century CE, however, that Tantric Buddhism introduced the hierarchy of chakras running along the spine to the top of the head.

Misinformation Effect

1994

Elizabeth Loftus (b. 1944)

In a classic set of experiments, psychologist Elizabeth Loftus showed participants a film of an automobile accident. Half the participants were then given misleading information about the accident, such as a reference to a yield sign that was actually a stop sign. When asked later, those who received the false information reported they had seen a yield sign. Many added details to their accounts, such as remembering broken glass and injured people.

Once this misinformation effect was identified, Loftus explored what happens to memory when we are given false information. In another experiment, subjects were asked if they remembered being lost in a mall as a child and the kindly older man who helped them find their parents. Although this did not actually happen to the subjects, after a few days they began to repeat the false memory as true.

This may have remained a clever bit of research but for the fact that, at the same time, a wave of reports of child sexual abuse by parents, relatives, and caregivers was sweeping the United States. Families were torn apart as the accused person was convicted, went to prison, and, in some cases, committed suicide.

What came to light, however, was that many therapists had begun using a recovered-memory technique that encouraged adults who displayed certain symptoms—depression, headaches, obesity, anxiety—to believe that they had probably been abused as children. The therapist would then help them “recover” this memory, which had been repressed deep into the unconscious. Yet research demonstrated that memory does not work the way the therapists claimed.

It is possible that many of the therapists may have unintentionally planted false memories in their patients. No one disputed that many children had been abused. In far too many cases, however, the patients had never been abused, yet their family members and other innocent people had been sent to jail based on so-called recovered memories.

In 1994, Loftus brought her research and its implications for false memory syndrome together in her book *The Myth of Repressed Memory*. She carefully showed how therapists could unwittingly create memories of abuse that had never occurred. Of course, the book was highly controversial, even leading to death threats against Loftus by therapists who believed their professional livelihood had been endangered by Loftus's research.

SEE ALSO Remembering and Forgetting (1932), Levels-of-Processing Model of Memory (1972)

Traffic accident in the district of Pinneberg, Germany, 2010. In her earlier work on eyewitness memory, Loftus showed some of her subjects a film of an auto accident and then provided misleading information about it, discovering that false details had a significant effect on how subjects recalled the accident.

Looping Effects of Human Kinds

1995

Ian Hacking (b. 1936)

How do kinds or categories of people—such as the homosexual, the multiple personality, and the autistic—come into being? How do classifications of people affect possibilities for action and self-construal by those who become so classified and those who react to them? Canadian philosopher of science Ian Hacking has explored these questions using several examples from the history of the human sciences to demonstrate what he calls the "looping effects of human kinds."

Hacking argues that many kinds of human beings come into existence and are coconstituted with our invention of ways to name them. The homosexual, for example, came into being in the late nineteenth century not because same-sex acts had not existed before that time but because classifying someone as homosexual or heterosexual became relevant in a way it had not been before then. This in turn creates the possibility of identifying as a certain kind of person. The process whereby people relate to these categories and in turn change the categories is referred to as the looping effect. In 1995, Hacking published an extended study of this process in *Rewriting the Soul: Multiple Personality and the Sciences of Memory.* In this work, he reconstructs the historically contingent processes that changed the experience of dissociation into the psychiatric category called multiple personality disorder and the effect this new category had on our understanding and behavior.

The looping effects of human kinds has important implications for psychology. Human beings' ability to reflect on their classifications, to change them, and to bring new ways of being into existence means that the very things psychologists study are constantly changing. Since psychologists themselves create new classifications, they are often directly implicated in this process.

SEE ALSO American Classification of Mental Disorders (1918)

Jupiter Kissing Ganymede, *fresco by either German painter Anton Raphael Mengs or his friend, the notorious Italian womanizer Giacomo Casanova, 1758. This artwork portrays the ancient Greek practice of pederasty, in which an adult male and a younger male engage in a socially acknowledged erotic relationship.*

Stereotype Threat

1995

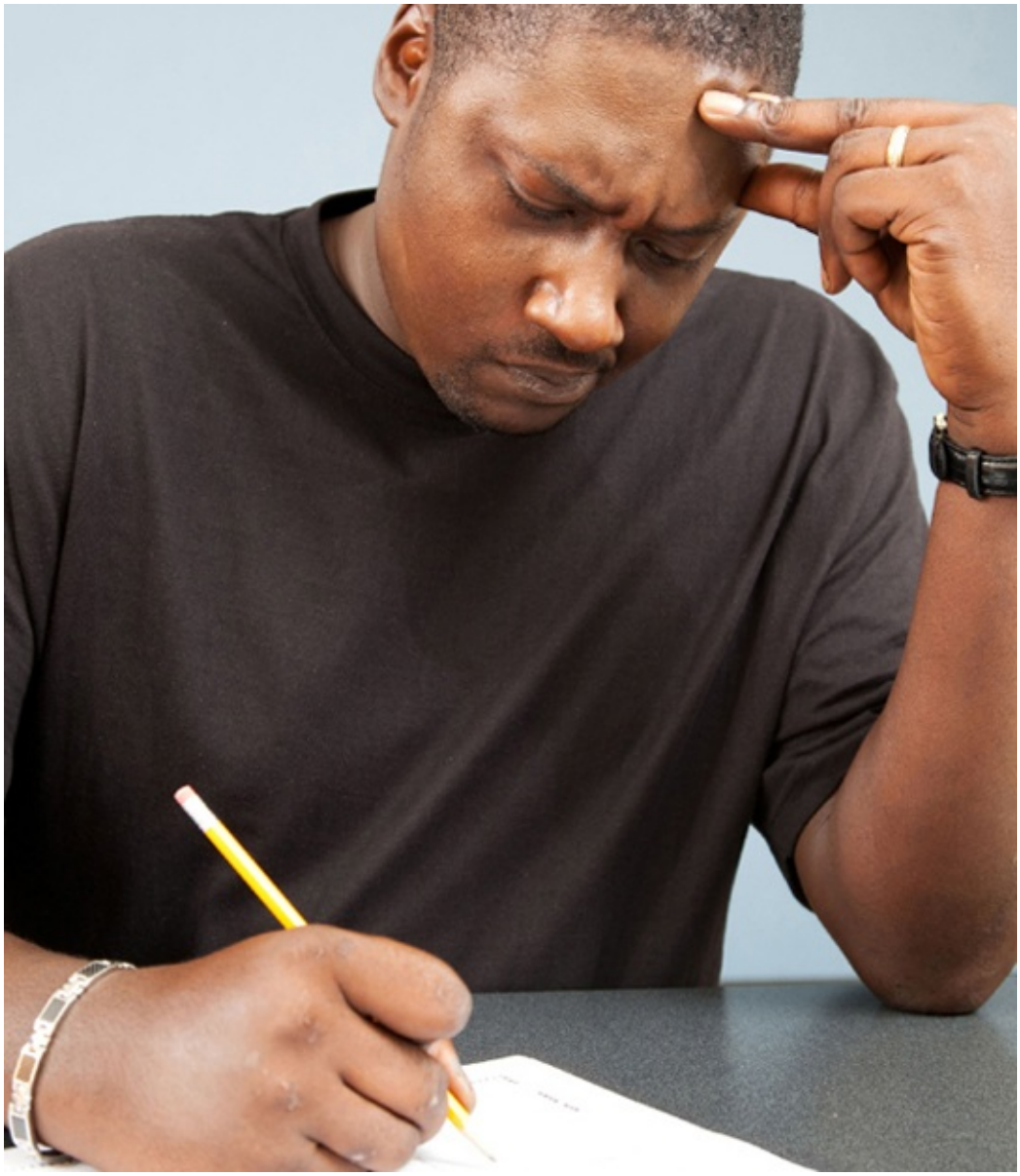
Claude Mason Steele (b. 1946)

Why do many women fail to perform as well as some men on tests of mathematical ability, even when their histories indicate they are equally capable? Why is the college dropout rate for intelligent and talented African American students so much higher than it is for students of European descent? In 1995, American social psychologist Claude Steele proposed stereotype threat as one possible explanation.

Social psychologists define stereotype threat as a person's fear that he or she will confirm the stereotype of a particular group to which he or she belongs. The presence of this threat indicates that the source of failure or poor performance may lie in the social environment rather than within the individual. Thus the stereotype that men are better at math may depress women's performance on tests of mathematical ability. This is most likely to occur when the stereotype is presented before the test is taken. The negative effect of stereotype threat has been demonstrated in athletics, entrepreneurship, the game of chess, and other domains.

Steele has focused on the effect of stereotype threat on high-achieving African American students. In the United States, there is a negative stereotype about the intellectual ability of African Americans. In a series of experiments in which a difficult English test was given to bright white and black students, African Americans did poorly compared to the white students when the test was presented as a test of their verbal abilities (a stereotype threat). When the same test was presented as a study of the ways in which difficult problems are solved and not as a study of intellectual ability (a non-stereotype threat), then there was no difference between the performance of black students and the performance of white students. Steele found that the way to reduce stereotype threat for African Americans is with explicit information that a test or challenge is racially fair, thus increasing the confidence of black students by reducing the doubt they might otherwise experience.

SEE ALSO Army Intelligence Tests and Racism (1921), The Doll Studies (1943), Contact Hypothesis (1954)



This African American man's test anxiety might be due, in part, to the stereotype threat.

Autonomous-Relational Self

1996

Çiğdem Kağitçibaşi (b. 1940)

Western researchers tend to dichotomize cultural notions of self into independent (Western) and collectivist (Eastern) orientations. Thus a child growing up in the United States is expected to be independent and self-reliant, whereas a child growing up in India is likely to have a sense of identity oriented to family relationships. This kind of dichotomizing is, of course, simplistic.

Turkish developmental psychologist Çiğdem Kağitçibaşi offered a third and more complex approach: the autonomous-relational self. She pointed out that most models of psychological development assume that the goal of development is an autonomous (or independent) adult self. This, Kağitçibaşi argued, is predicated on a very Western notion of selfhood. She argued that instead of this model, researchers should place changes in development in a broader cultural context. Under the pressure of modernization over the last one hundred years, there has been a convergence of independent and collectivist orientations. Globalization has made many Majority World families similar to Western families, but the strength of their cultural traditions has helped them retain close relational ties among their members. This is in contrast to older research, in which autonomy and relatedness were often contrasted as incompatible opposites. Now studies show that autonomy and relatedness are harmonious aspects of the human experience. Along with competence, they make up the three basic human needs found in all societies.

Research from around the world has emphasized the importance of social networks in the maintenance of mental and physical health. Studies conducted among immigrant and refugee populations have been particularly helpful in demonstrating that we as humans are capable of self-governance while being fully dependent on close relationships. For those who migrate from their home to a new culture, the combination of self-sufficiency and close bonds may help a person through the difficulties of adapting to a new society, especially when there are great differences between the receiving culture and the one of origin.

Since Kağitçibaşi's articulation of the full-fledged theory in 1996, other investigations have supported the basic approach of the theory of the autonomous-relational self in cultures as diverse as Japan and the Netherlands.

SEE ALSO Culture-Bound Syndromes (1904), Cultural Relativism (1928), *The Presentation of Self in Everyday Life* (1959)

Rather than dichotomizing cultural notions of the self into independent and collectivist orientations, Kağıtçibaşi's autonomous-relational self theory examines how globalization has led to the convergence of the two orientations.

The Emotional Brain

1996

Joseph LeDoux (b. 1949)

The birth of your daughter. The day you nearly stepped on a rattlesnake. Proposing to your future spouse on the Pont Neuf in Paris. Each of these events seems etched in your memory, easy to recall, often on your mind. Why? Neuroscientists are increasingly convinced that one structure within the brain, the amygdala, is central to our emotional memories, perhaps even playing the crucial role in ensuring that we have emotional memories. In 1996, neuroscientist Joseph LeDoux published his landmark volume *The Emotional Brain*, which summarized what was then known about the role of the amygdala in our emotional lives. LeDoux drew on almost a century of research about emotions and the amygdala, including psychologist Carlyle Jacobsen's famous studies of two chimps, Becky and Lucy; Becky underwent the world's first lobotomy, which reduced her aggressive behavior. The technique was soon used for thousands of humans.

The amygdala appears to detect the emotional content of a situation, including both negative and positive emotional processing. Hundreds of experimental studies have shown that the amygdala is activated in fear-inducing situations. It has rich neural connections to the brain stem, so that when these stimuli are detected, avoidance behavior can be activated. It also projects to the frontal cortex, where the cognitive aspects of emotional processing occur. More recently, researchers have found that the amygdala also is important in the detection and processing of positive emotions, such as those related to food or opportunities for sexual behavior.

Perhaps most important, the amygdala has rich connections with a nearby brain structure, the hippocampus, which is important for recall function. It is in this context that the role of the amygdala in memory formation is so important. We now know that emotional arousal—mediated by the amygdala—leads to more robust long-term memories.

SEE ALSO Psychosurgery (1935), Universal Expression of Emotions (1971)

LeDoux's landmark book focused on the role of the amygdala (highlighted) in forming emotional memories.

Tend and Befriend

2000

Shelley E. Taylor (b. 1946)

The physiologist Walter Cannon proposed that the normal response to threats and tension was best characterized as fight or flight, while the endocrinologist Hans Selye warned that repeated exposure to danger led to **Stress** and eventually to a failure of adaptation, exhaustion, and possibly death. Both concepts have proven immensely useful in understanding human health and developing effective interventions. But neither of them speaks directly to the psychological experience of threat and stress.

In an article published in *Psychological Review* in 2000, social psychologist Shelley Taylor proposed the psychological concept of tend and befriend, which was based on many years of research into the psychological factors in women's health. The model has proven useful in understanding both human and animal behavior in stressful and threatening situations. Tend and befriend proposes that a fundamental psychological response in such circumstances is to affiliate with each other and to offer help and nurturance. For example, when hurricanes destroy houses and threaten lives, humans typically respond by offering financial aid, shelter, and comfort to those affected.

A striking aspect of the tend-and-befriend theory is the proposal that such a response may be more typical of females than it is of males. Among rats, for example, it is female rats who huddle together for protection when intimidated; males do not. Taylor suggests that this is a result of evolutionary pressures related to the care and protection of offspring, who are the most vulnerable in times of threat. In many species it is the mother or another female who is most likely to attend to the needs of the offspring.

A biological component of this response can be found in the release of the hormone oxytocin in stressful situations. The beneficial effects of oxytocin are enhanced by estrogen. One known effect of oxytocin is to stimulate affiliative behaviors, and this has been demonstrated particularly in mothering. Research has shown that women are more likely than men to seek closeness with others

during times of stress and to be more supportive during such periods.

SEE ALSO Stress (1950), Resilience (1973)

Two little girls huddle together at the seashore, 2003.

Positive Psychology

2000

Martin E. P. Seligman (b. 1942), **Mihaly Csikszentmihalyi** (b. 1934)

Is it preferable to try to repair damage or prevent it? Is human life best described in terms of our weaknesses or our strengths? These are important questions for the science of psychology. For much of its existence, American psychology has focused on treatment rather than prevention, and more pages have been devoted to cataloging psychological pathologies than to understanding and promoting human assets. At the beginning of the twenty-first century, that began to change with the advent of positive psychology.

Two psychologists have been at the forefront of positive psychology's development: Martin Seligman and Mihaly Csikszentmihalyi. Seligman's journey began with work on experimental psychopathology—that is, using animal models to understand human mental disorders. He described how organisms can develop **Learned Helplessness**. By the early 1990s, he was writing about how optimism can be taught. Csikszentmihalyi is a Hungarian-born psychologist who spent many years studying creativity and optimal experience, or **Flow**. They famously met when Seligman spotted Csikszentmihalyi struggling in the water at a Hawaiian beach. The two psychologists contributed a set of science-based articles on what they called positive psychology in a special issue of *American Psychologist* in January of 2000.

In the years since their partnership began, they have created not only a science but also a movement determined to refocus American psychology on human strengths. It has attracted followers and fellow scientists from around the world. Positive psychology research has cataloged human strengths and virtues, which include wisdom, courage, kindness, and at least twenty-one others. It has studied creativity and exceptional talent and articulated what makes us happy, the power of optimism, and the qualities that define good work. It has also emphasized the

need for civic virtues and healthy communities.

Situated historically, positive psychology owes much to earlier psychological research and practice. Looking to the future, it may help us adapt to a world of diminishing resources and increasing competition.

SEE ALSO, Humanistic Psychology (1961), Black Psychology (1970), Flow (1990)

Salk Institute for Biological Studies in La Jolla, California, ranked number one in the world for biomedical research in neuroscience and behavior. Architect Louis Kahn's unique, symmetric design, which allows warm, natural light to enter the buildings on either side of the courtyard, reflects the optimism of positive psychology and its effort to maximize human strengths.

Emerging Adulthood

2004

Jeffrey J. Arnett (b. 1955)

In 1904, psychologist G. Stanley Hall argued that the physiological and psychological characteristics of individuals in their teen years were unique, and thus they should be considered as in a distinct life stage: **Adolescence**. A half century later, psychologist Erik Erikson stated that adolescence was best characterized by the psychosocial challenge of forming a personal identity that would prepare an individual for the adult challenges of intimacy and vocational choice.

By the late twentieth century, some social scientists in developed, affluent countries began to notice that the path of young adults was not following the markers suggested by Hall and Erikson; they seemed to be in a transitional state that retained some of the traits of adolescence, such as identity formation, while also obtaining some adult characteristics, such as becoming sexually active, though typically without being married.

Jeffrey Arnett, a psychologist at Clark University (where, coincidentally, Hall had been the first president), began studying early adulthood in the 1990s. He decided that the label of "young adult" was inaccurate. It implied that adulthood had been reached even though many of the decisions and life choices that were typically thought to mark adulthood had not been made. He coined the term *emerging adulthood* to describe what he called a new life stage and fully described it in his 2004 book, *Emerging Adulthood.*

Individuals in the emerging-adulthood stage are best described as still in the process of forming a personal identity and choosing a vocation, often through higher education. Unlike the same age group fifty years earlier, they are less likely to be married or to have children. In the United States, more than 80 percent of individuals in emerging adulthood are sexually active, and more than half are in intimate, cohabiting relationships.

SEE ALSO Adolescence (1904), Identity Crisis (1950)

Psychologist Jeffrey Arnett coined the term emerging adulthood *to describe the period of life after adolescence, when many individuals in wealthy nations have graduated from high school but are still seeking an identity before committing to a vocation or life partner.*

Sexual Fluidity

2008

Lisa Diamond (b. 1971)

If Ann comes out as a lesbian at age eighteen, does that prove her sexual orientation is fixed for the rest of her life? Will she always and only be attracted to other women? For many years the gay community has argued for a fixed-identity model of sexual attraction that is rooted in biology and thus not mutable. Such a model would posit that Ann has now settled forever on her sexual orientation.

In 2008, psychologist Lisa Diamond disturbed the status quo. In a series of articles, and in her subsequent book *Sexual Fluidity,* Diamond reported on her longitudinal study of seventy-nine lesbian, bisexual, and unlabeled women. Rather than a fixed identity, about two-thirds of the sample changed their sexual identification over the term of the study, and Diamond concluded that the most notable marker of women's sexual attraction is variability and change over time. Thus for women, more so than men, sexual identity is the result of the intersection of biology, environment, time, and context. Many of the women in her study reported it was the relationship that was important in the attraction.

In accord with this, Diamond has posited that sexual identity is a developmental process. When a person first recognizes a same-sex attraction, it is typically a very important moment. But with the passage of time, the person ceases to worry about sexual identity, and the focus shifts to relationship building.

It is this variability that Diamond refers to as sexual fluidity. She argues that for women sexual orientation is not like a fixed compass point; in fact, there may not be a compass at all. Diamond now suggests that a better term to describe those for whom sexual attraction shifts over time is *nonexclusive attraction.* Her publications have triggered an enormous body of research on women's sexuality, now examined through the new lens of fluidity.

SEE ALSO The Kinsey Reports (1948–1953), *Human Sexual Response* (1966)

Sappho's Bedtime *by Swiss artist Charles Gleyre, 1867, showing the famous Greek lyric poet in the nude. Sappho was widely known for her poetry, as well as her bisexuality, and her birthplace of Lesbos is where we get the word lesbian to describe women who are attracted to other women.*

The BRAIN Initiative

2013

Barack Obama (b. 1961)

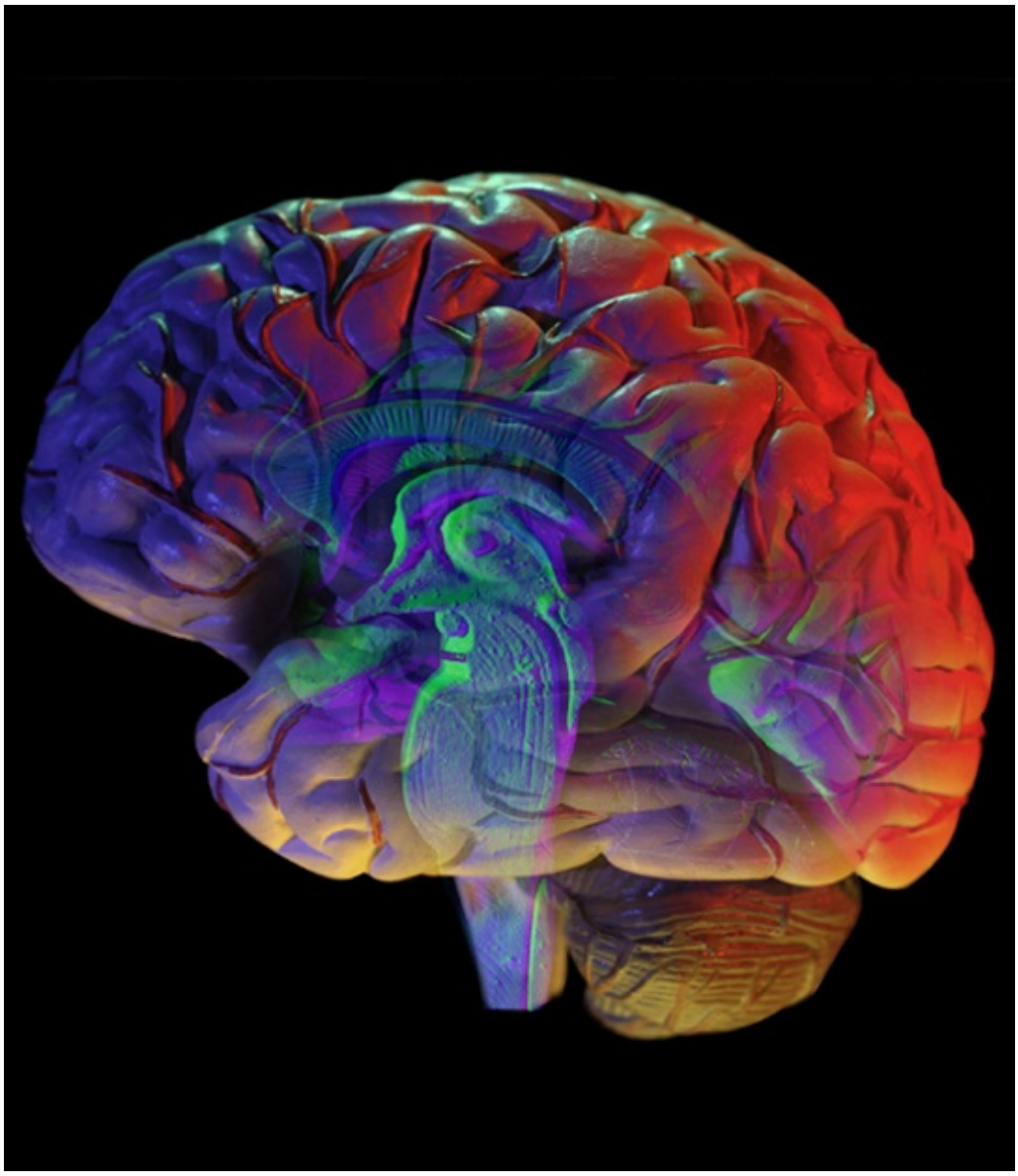
On April 2, 2013, President Barack Obama announced the BRAIN Initiative. BRAIN is an acronym for Brain Research through Advancing Innovative Neurotechnologies, a new endeavor intended to dramatically expand the scientific understanding of the brain. The president and the scientists who planned the program hope that the resulting research will provide not only a deep insight into the basic science of brain function but also new and better ways to treat, cure, and prevent brain disorders, including Alzheimer's disease and traumatic brain injury. The initiative will be funded by a significant amount of federal funds ($100 million) channeled through three federal agencies: the National Institutes of Health (NIH), the Defense Advanced Research Projects Agency (DARPA), and the National Science Foundation (NSF). Private foundations will also play a major role in funding the initiative, including the Allen Institute for Brain Science, the Howard Hughes Medical Institute, the Salk Institute for Biological Studies, and the Kavli Foundation.

BRAIN will attempt to map the activity of the brain while it is occurring; in fact, during the planning stages the project was called the Brain Activity Map. At the time of the announcement in 2013, scientists had the ability to record the communications of a few hundred neurons at a time. But the goal of the project is to map and record hundreds of thousands of brain cells while they are communicating with each other. The hope is that research will make it possible to capture real-time pictures of complex neural circuits at the speed of thought. If that happens, perhaps applications could be developed to directly link brain function and specific human behavior and learning, with the result that interventions for some of our most urgent brain diseases can be formulated.

The project will require the invention of new technologies and techniques, and the initiative's scientific leaders anticipate that the effort to create these new technologies will be enabled through interdisciplinary collaborations among mathematicians, computer scientists, geneticists, molecular biologists, and

scientists from multiple other fields.

SEE ALSO Localization of Brain Function (1861), Brain Imaging (1924)



President Barack Obama's BRAIN Initiative promises to offer us a three-dimensional map of brain activity as it occurs, directly linking the function of complex neural circuits with human behavior and learning.

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